



READ THIS BOOK

first

Macintosh Performa User's Manual

*Includes setup, troubleshooting, and health-related information
for Macintosh Performa 6400 series computers*



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for Macintosh Performa 6400 series computers*

 Apple Computer, Inc.

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Contents

.....

Communications regulation information vii

Preface Welcome to Macintosh ix

1 Getting Started 1

Plugging in the computer 2

Installing an expansion card 5

Connecting a monitor 5

Connecting the mouse and keyboard 8

Connecting the modem 10

Connecting other equipment 12

Turning the computer on for the first time 12

Problems turning on your computer? 15

What's next? 16

Learning the basics in the Performa tutorials 17

Reviewing the basics 19

Turning the computer off 21

Turning the computer on 22

Where to find answers 23

2 Getting Help 25

- Getting answers to your questions 26
- Tips for using Macintosh Guide 33
- Identifying what's on your computer screen 34
- Learning useful shortcuts 35

3 Connecting Equipment and Expanding Your Computer 37

- Using your computer's sound features 40
- Connecting audio equipment 44
- Connecting external SCSI devices, such as a scanner or external hard disk 53
- Expanding memory 57
- Replacing or adding internal storage devices 57

4 Using Programs and Backing Up Disks 59

- Installing application programs 60
- Working with several programs at a time 62
- Protecting the information on a disk 63
- Using application programs designed for the PowerPC microprocessor 65
- Using older Macintosh programs 65

5 Using the Built-in CD-ROM Drive 67

- Inserting a CD-ROM disc 68
- Ejecting a CD-ROM disc 69
- Using the CD-ROM discs that came with your computer 70
- Types of compact discs you can use 70
- Playing audio CDs 72
- Working with Photo CDs 72
- Sharing a CD-ROM disc over a network 74

6	Troubleshooting	75
	When you have questions	75
	If you have trouble	75
	Solutions to common problems with your computer	80
	Solutions to CD-ROM problems	94
	If your computer's performance decreases	100
	Solving printer problems	101
	Starting up from the <i>Macintosh Performa CD: Performa Software</i>	102
	Repairing a damaged disk	104
	Initializing a hard disk	108
7	Reinstalling Your Computer's Software	111
	When should you reinstall system software?	111
	When to use the <i>Macintosh Performa CD: Performa Software</i>	112
	Using the CD-ROM disc as your startup device	113
	Reinstalling your system software	115
	Reinstalling all your original software	118
	If you still have problems	119
	Copying files from the <i>Performa Software</i> CD-ROM disc to your hard disk	120
	Protecting the information on your hard disk	121
	Creating a startup floppy disk	121
8	Connecting Equipment for Special Purposes	123
	Connecting to a network	123
	Viewing TV and video on your computer	126

9 Installing Expansion Cards 127

- Opening the computer 129
- Installing a PCI card 134
- Installing a communication card 140
- Closing the computer 145

Appendix A Health, Safety, and Maintenance Tips 149

- Health-related information about computer use 149
- Safety instructions 154
- Handling your computer equipment 155
- Cleaning your equipment 160
- Locking and unlocking the mouse 162

Appendix B Installing Additional Memory 165

- DRAM configurations 166
- High Performance Module configurations 167
- Installing the DIMM or High Performance Module 167

Appendix C Special Keys on Your Keyboard 179

- Typing special characters and symbols 181
- Special key combinations 183

Index 185

Communications regulation information

FCC statement

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. See instructions if interference to radio or television reception is suspected.

Radio and television interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple’s instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio.
(That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

DOC statement

DOC Class B Compliance This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Department of Communications.

Observation des normes—Classe B Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur : “Appareils Numériques”, NMB-003 édictée par le ministre des Communications.

VCCI statement

情報処理装置等電波障害自主規制について

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

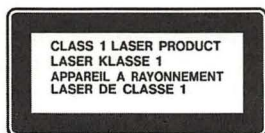
取扱説明書に従って正しい取り扱いをしてください。

CD-ROM drive

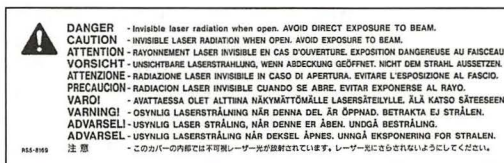
WARNING Making adjustments or performing procedures other than those specified in your equipment’s manual may result in hazardous exposure.

WARNING Do not attempt to disassemble the cabinet containing the laser. The laser beam used in this product is harmful to the eyes. The use of optical instruments, such as magnifying lenses, with this product increases the potential hazard to your eyes. For your safety, have this equipment serviced only by an Apple-authorized service provider.

If you have an internal Apple CD-ROM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located in a user-accessible area, indicates that the drive meets minimum safety requirements. A service warning label is located in a service-accessible area. The labels on your product may differ slightly from the ones shown here.



Class 1 label



Service warning label



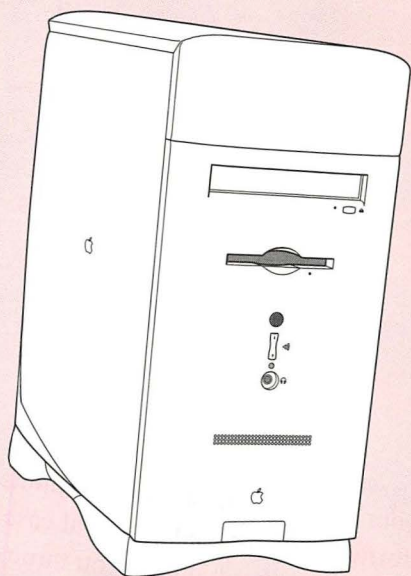
Welcome to Macintosh

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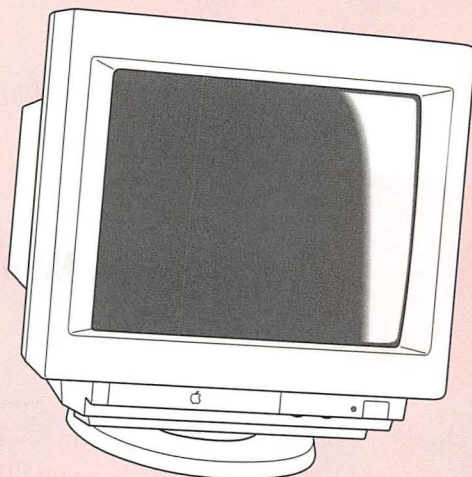
Congratulations on the purchase of your new Macintosh. Your computer is designed to give you the highest performance combined with real ease of use. It's also easy to set up and easy to expand. This book guides you through the setup procedure, tells you how to expand your Macintosh, and provides many tips on using your new system.

Your Macintosh computer is powered by the new **PowerPC™** microprocessor (or “chip”). This microprocessor was designed by Apple Computer, Inc., Motorola, Inc., and IBM Corporation. The **PowerPC** microprocessor uses Reduced Instruction Set Computing (RISC) technology to deliver very high performance at the lowest possible cost. The **PowerPC** RISC microprocessor represents the state of the art in microprocessor design.

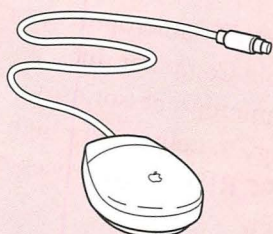
Your new Macintosh will run almost all of your existing Macintosh software, but for best performance and greatest speed, look for the new software programs designed especially for computers that contain the **PowerPC** microprocessor. You'll find **PowerPC** microprocessor-compatible programs at any software store that carries products for the Macintosh computer.



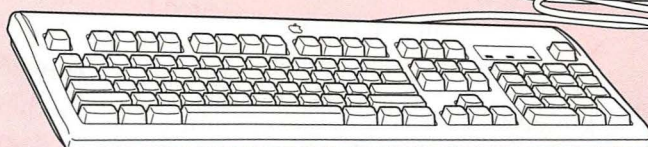
Macintosh Performa computer



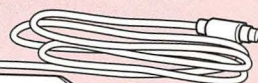
Monitor



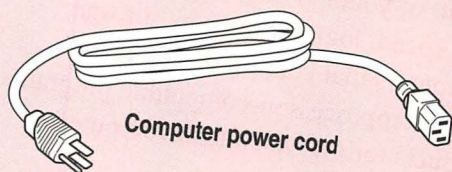
Mouse



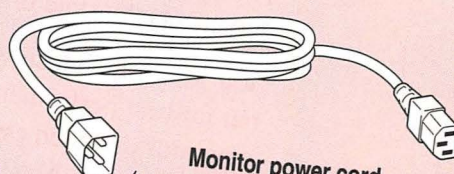
Keyboard



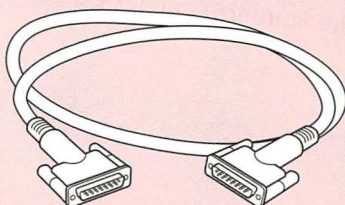
Keyboard cable
(permanently attached
to the keyboard)



Computer power cord



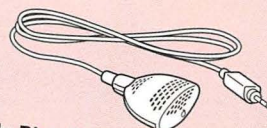
Monitor power cord
(sometimes built into the monitor)



Monitor video cable
(sometimes built into the monitor)



Phone cord
(comes with optional internal modem)



Apple PlainTalk Microphone (optional)

Follow the instructions in this
chapter to set up your computer
and learn the basics.

1

Getting Started

.....

The illustration on the facing page shows all the equipment you will need to set up your computer and begin using it. Place your equipment on a sturdy, flat surface near a grounded wall outlet. Before following the setup instructions in this chapter, you may want to read “Arranging Your Office” in Appendix A (in the section on health-related information) for tips on adjusting your work furniture so that you’re comfortable when using the computer.

If you used the setup poster: The poster included with your Macintosh Performa computer was designed to help you start using your computer as quickly as possible. This chapter contains more detailed information than the poster. If you have already set up your computer using the poster, you may want to turn to the section “What’s Next?” later in this chapter.

Plugging in the computer

Before you plug your Macintosh into a wall socket, carefully read all the setup instructions in this chapter. Then, before you connect anything to your Macintosh, follow the instructions in this section on how to plug it in. The plug grounds the computer and protects it from electrical damage while you are setting up.

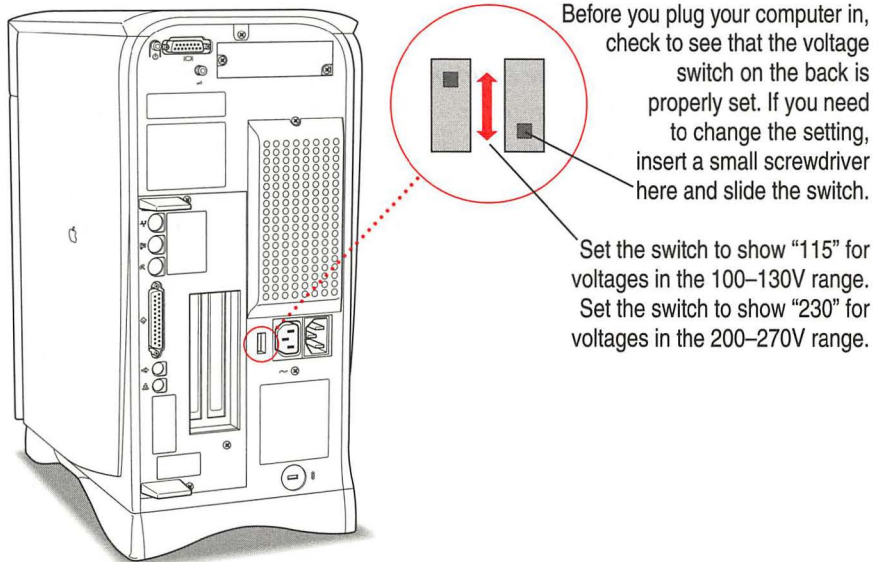
When you are ready to begin, follow these steps:

- 1 Place the computer where you want it—either on the floor or on a sturdy desk.**

If your computer came with a modem, you may want to set your computer near a phone jack (if possible) so that you can connect your modem later.

- 2 Make sure the voltage switch on the back of the computer is set for the kind of voltage system you will be connecting to.**

The voltage switch must be set correctly to avoid damaging your computer. If you don't know the voltage used in the country you're in, refer to the table "Voltages for Different Locations" later in this chapter.



Voltages for different locations

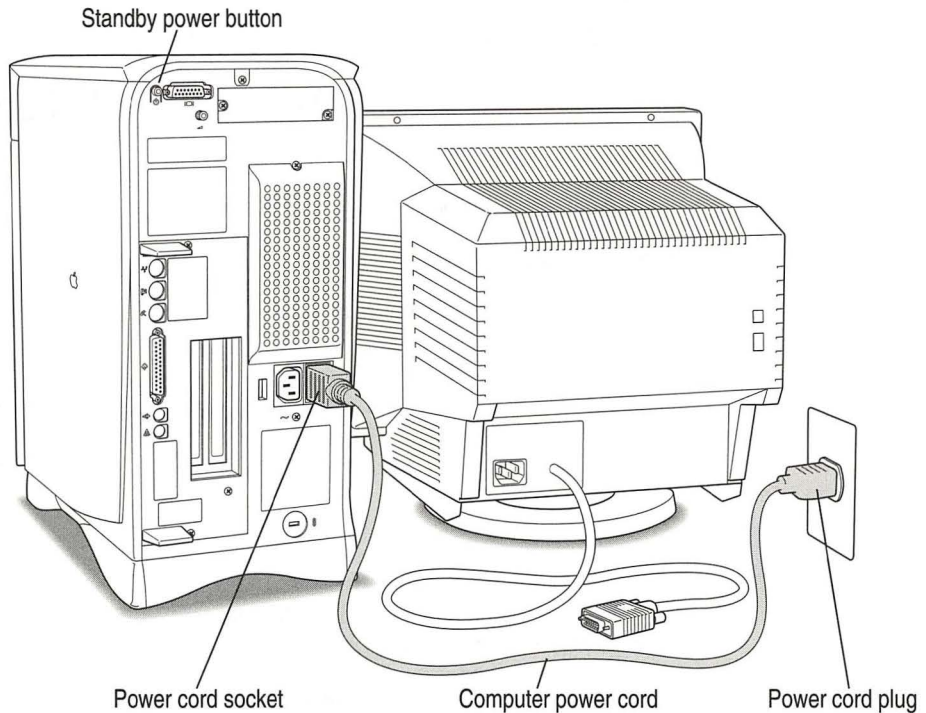
For any voltages between 100 and 130 in the chart below, set the voltage switch on the back of your computer to “115.” Set the switch to show “230” for a voltage between 200 and 270.

IMPORTANT In some countries, you may have one of two voltages. If you're not sure which of the two voltages you have, check with your electricity supply company before plugging in your computer.

Country	Voltage
Japan	100
Algeria, Indonesia, Lebanon, Libya, Peru, S. Korea, Vietnam	100 or 220
Ecuador, Jamaica, Philippines, Taiwan	110
Bermuda, Canada, Puerto Rico, United States, Venezuela	120
Colombia, Mexico, Saudi Arabia	127
Brazil	127 or 220
Hong Kong	200
India, South Africa	220–250
Israel, Pakistan, Singapore	230
Australia, Kuwait, Malta, New Zealand, Northern Ireland, Papua New Guinea, Oman, Qatar, United Kingdom	240
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland	220–230
Bahrain, Chile, China (People's Republic), Czechoslovakia, Egypt, Greenland, Hungary, Iceland, Iran, Jordan, Liechtenstein, Nepal, Paraguay, Poland, Romania, United Arab Emirates, Russia and the Commonwealth of Independent States (CIS), Yemen, Yugoslavia	220

- 3 Plug the socket end of the computer's power cord into the power cord socket on the back of the computer.
- 4 Plug the other end of the power cord into a three-hole grounded outlet or power strip.

Make sure at least one end of the power cord is within reach so that when you need to unplug the computer you can do so easily.



WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

If the computer starts up: If you hear a tone, the computer has started up and you need to turn it off before proceeding. Press the standby power button (⏻) located on the back of the computer to turn it off.

Installing an expansion card

If you purchased an expansion card (such as a special video card) for your Macintosh, install it now. See Chapter 9, “Installing Expansion Cards,” for instructions. If you don’t have an expansion card, continue with the next section, “Connecting a Monitor.”

Connecting a monitor

You can connect many types of monitors to your Macintosh. To connect a monitor, refer to the instructions that came with it, in addition to the instructions here.

Connecting the monitor power cord

Monitors have two cords to connect: a monitor power cord and a monitor video cable.

To connect the monitor power cord, follow these steps:

1 Place the monitor where you’ll be using it.

Keep these considerations in mind:

- Allow a few inches for air circulation around the computer and monitor.
- Position the monitor with the top of the screen at slightly below eye level when you sit at the keyboard.
- Position the monitor to minimize glare and reflections on the screen from overhead lights and windows.
- Consult “Arranging Your Office” in Appendix A for suggestions on locating your computer equipment.

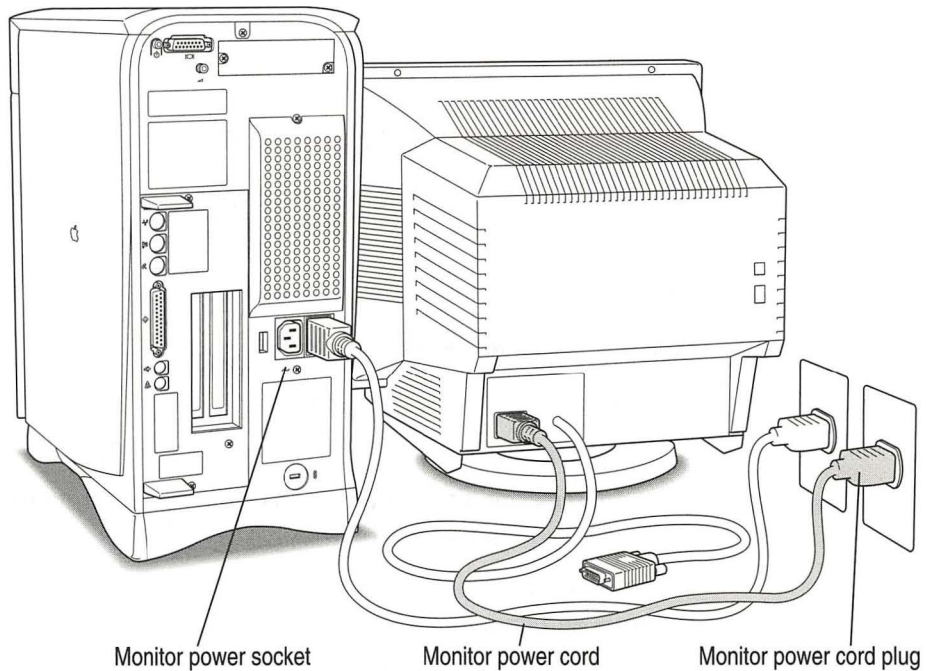
2 Connect the monitor power cord to the monitor.

On some monitors, the cord is already attached.

3 Plug in the monitor power cord.

Some monitor power cords are designed to plug into the back of your computer.

Some monitor power cords must be connected to a grounded electrical outlet, not to the computer. Check the information that came with the monitor.



Connecting the monitor video cable

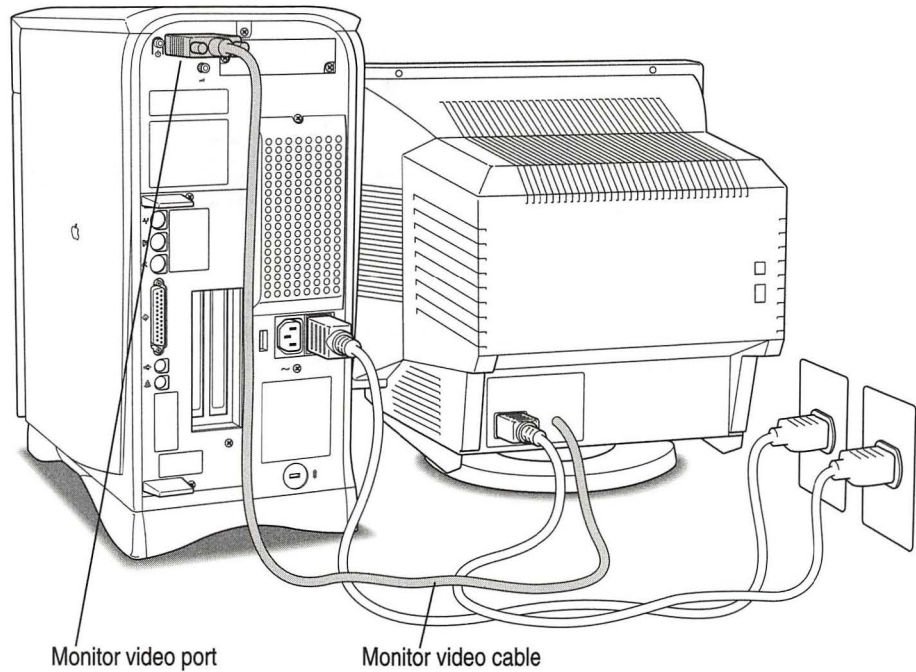
After you plug in the monitor power cord, connect the monitor video cable to the computer's monitor video port.

To connect the monitor video cable, follow these steps:

- 1 **Attach the monitor video cable to the monitor so that it appears as shown in the illustration.**

On some monitors, the cable is already attached.


- 2 **Attach the monitor video cable to the monitor video port on the back of the computer so that it appears as shown in the illustration.**




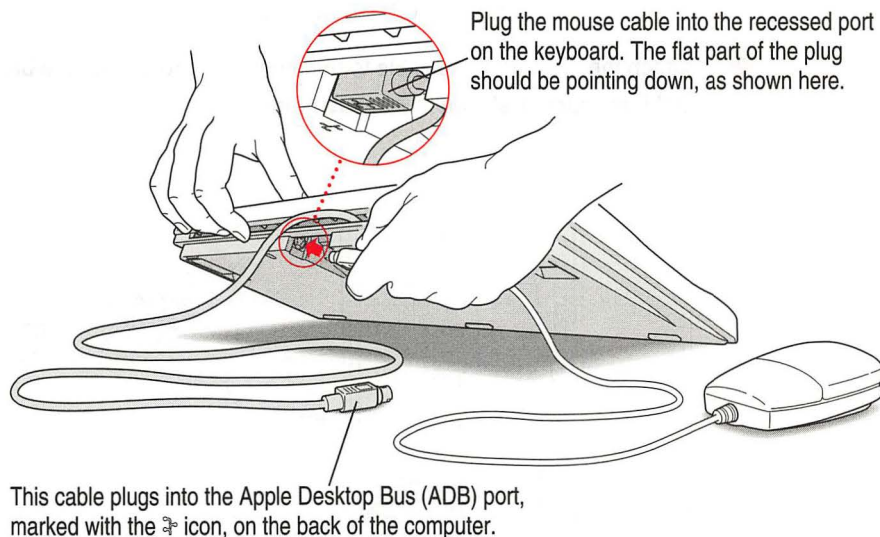
If your monitor has a microphone or speakers, you may need to connect additional cables. See the documentation that came with the monitor.

Connecting the mouse and keyboard

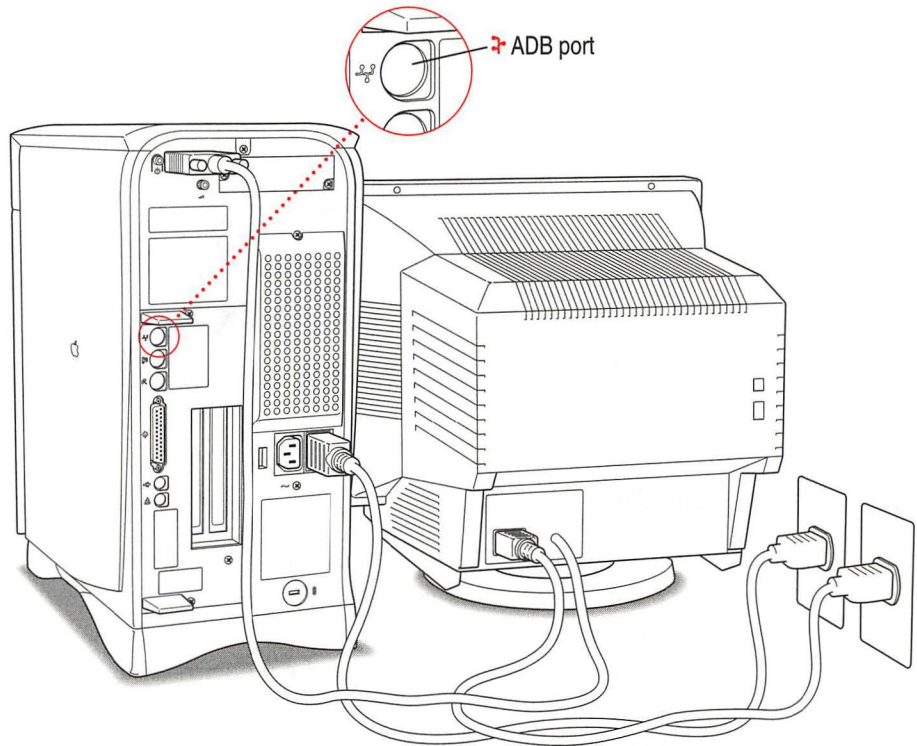
- 1 Plug the mouse cable into the recessed port on the back of the keyboard.

The plug and the port are marked with the  icon (symbol). The positions of the port and icon on your keyboard may be different from those pictured.

By the way: A port marked with the  icon is called an Apple Desktop Bus (ADB) port.

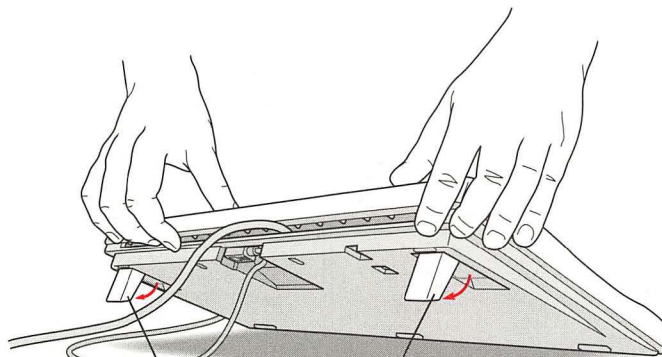


- 2 Plug the keyboard cable into the ADB port marked with the  icon on the back of the computer.



Some monitors also have a port to which you can connect the keyboard or mouse. See the information that came with the monitor.

- 3** If you want to adjust the keyboard angle, lower the feet on the keyboard.



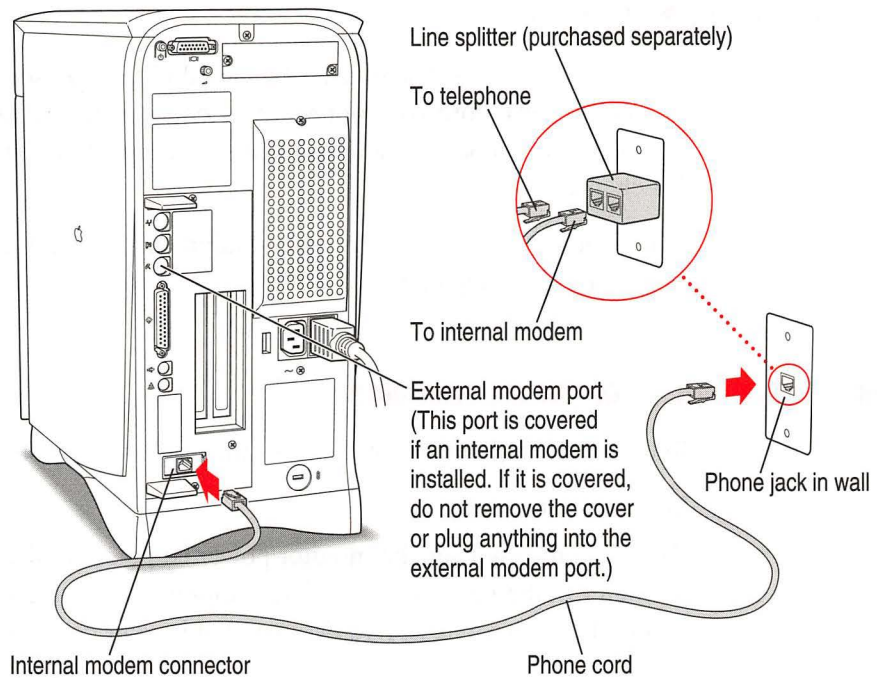
To adjust the keyboard angle, lower the feet until they snap into position.

Connecting the modem

A modem is hardware that may already be installed inside your computer. The modem enables your computer to send and receive faxes and telephone calls, to connect to the Internet, to access online services, and to communicate with other computer users. (You use the modem through the appropriate software already installed on your Performa. See your modem documentation for information on how to use the modem and software.) You can confirm whether you have an internal modem by seeing if you have an internal modem connector on the back of your computer, as shown in the next illustration. (Also, a standard telephone cord will have come with your computer.)

If your computer came with an internal modem and you want to connect the modem now, follow the next illustration. If your computer came with an external modem, connect it to the external modem port and follow the instructions in the modem manuals that came with your computer or with the modem.

IMPORTANT When connecting a modem, make sure you connect the modem to an analog phone line—the kind used typically in homes. (A digital phone line could damage the modem.) If you're connecting the modem at home, you probably have an analog phone line. Your modem manuals contain more information about using your modem.



You can use any standard phone cord to connect your internal modem connector to a phone jack. If you have only one phone jack, consider purchasing a line splitter at an electronics supply store. A line splitter enables you to plug your phone and your modem into the same jack at the same time. Keep in mind that when your phone and your modem share a single phone line, you will not be able to use both pieces of equipment at the same time, even if they are attached to separate phone jacks. While you use your modem, outside callers will get a busy signal and you cannot call out. When your phone is in use, you cannot use the modem. (By the way, you can keep your answering machine connected to your phone, even if your phone and modem share the same telephone line.)

IMPORTANT During lightning storms, disconnect your modem by unplugging its phone cord from the phone jack. This helps avoid accidental voltage overload.

Connecting other equipment

If you are new to the Macintosh, it's a good idea to get some experience using your computer before you connect other equipment, such as a printer or scanner. To learn basic Macintosh skills, continue with the instructions in this chapter.

When you're ready to connect other equipment to your Macintosh, see the instructions in Chapter 3.

Turning the computer on for the first time

To turn the computer on for the first time, follow these steps:

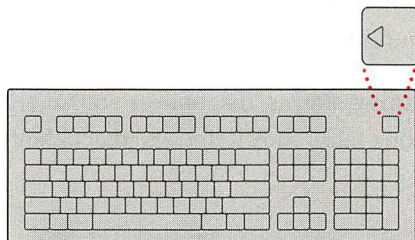
1 Turn on your monitor.

Note: You may not see the monitor power come on until you turn on the computer in the next step. Also, larger monitors can take several seconds to turn on if you have extra DRAM installed in your computer.

See the information that came with your monitor for the location of the power switch. On newer Apple monitors, the power switch is located on the front of the unit.

By the way: Depending on the type of monitor you have, you may only need to turn it on once. Some monitors turn off automatically when you shut down the computer, and turn on automatically when you start up the computer. Other monitors have to be turned on separately each time you turn on the computer.

2 Press the Power key (marked with a triangle) on your keyboard.

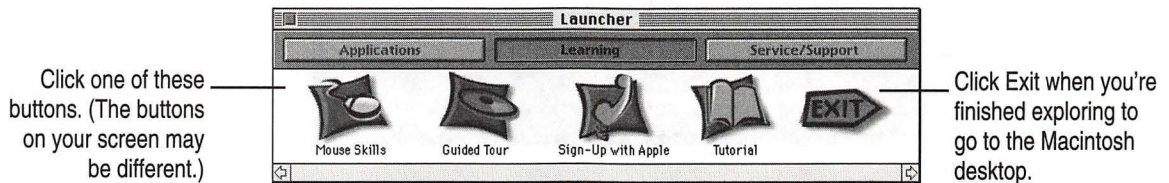


You hear a tone from the computer as it starts up.

3 Follow the instructions on your screen.

You will see a “welcome screen” with a Launcher (shown below) that you use to choose what you want to do next.

- If you don’t know how to use a mouse, press the letter M on your keyboard for an on-screen program that teaches you how to use the mouse.
- If you’re new to the Macintosh but familiar with how to use a mouse, click the Tutorial button to go through the Performa Tutorial, a program that teaches you how to use your computer.
- If you want to learn more about the capabilities of your Macintosh (not *how* you can use the Macintosh but more about *what* the Macintosh can do), click one of the other buttons on your screen.

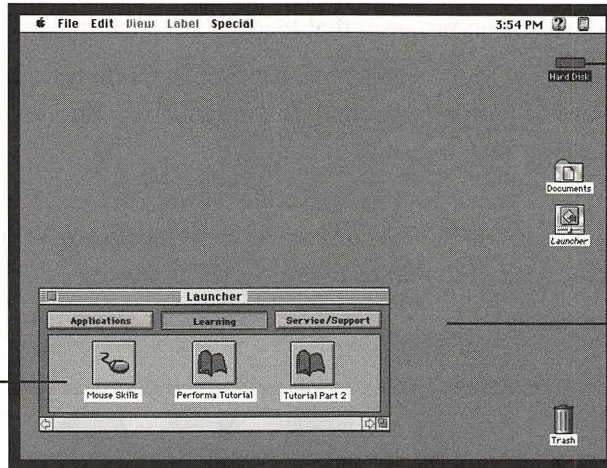


Note: If you see a blinking question mark or nothing at all, see the next section, “Problems Turning On Your Computer?”

- 4** When you're finished exploring the items on your screen, click **Exit**.

You'll see the Macintosh desktop as pictured below. (*Note:* Most computer screens have a slight black border around them.)

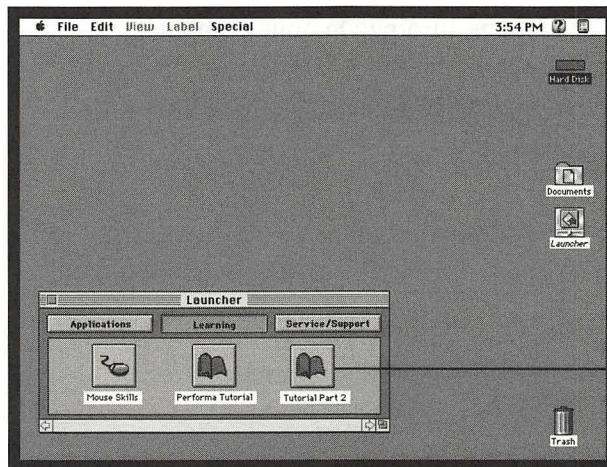
Your Launcher has more—and perhaps different—items in it than are shown in this illustration.



Hard disk icon

Macintosh desktop, after you exit the welcome screen




- 5** Take Part 2 of the Tutorial or skip to the section “What’s Next?” later in this chapter.



Click the Tutorial Part 2 button to continue learning the basics of your computer. (Your Launcher has more items in it than are shown in this illustration.)

Problems turning on your computer?

If the screen is dark, check these items to see if you can identify the problem:

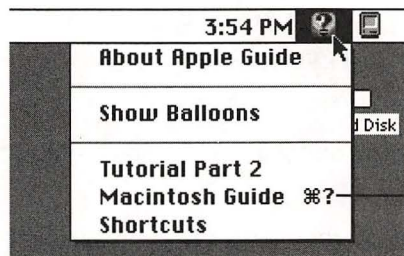
- Is the computer plugged into a power source? If it is plugged into a power strip, is the power strip turned on?
- Is the computer turned on? The power-on light on the front panel should be on. If it isn't, press the standby power button (marked with the symbol ) on the back of the computer.
- Are the keyboard and mouse cables connected correctly? (Don't disconnect the keyboard or mouse cable while the computer is on. You could damage your equipment.)
- Is the monitor power cord plugged in?
- Is the monitor turned on? (Check the power-on light on the front of the monitor.)
- Is the monitor video cable—the one connected to the monitor video port () on your computer—attached firmly to both the monitor and computer?
- Is the brightness control on the monitor adjusted correctly? (On most monitors, the brightness control is marked with the symbol )

If you see a blinking question mark on the screen, turn to “Solutions to Common Problems With Your Computer” in Chapter 6.

What's next?

Congratulations! You've finished setting up your computer. Now continue with one of the following steps:

- If you are new to the Macintosh, see the next section, "Learning the Basics in the Performa Tutorials."
- If you are an experienced Macintosh user, turn to Chapter 2, "Getting Help," to learn about Macintosh Guide. Or select Macintosh Guide from the Guide menu (⌘?) in the upper-right corner of your screen and explore it yourself.



What you can't find in this manual you can find in Macintosh Guide, your main source of information when working with your computer.

- If you want to connect other equipment, such as a printer, to your computer, see Chapter 3, "Connecting Equipment and Expanding Your Computer."
- If you want to install application software on your computer, see Chapter 4, "Using Programs and Backing Up Disks." The chapter contains information on setting up your programs and managing memory. You'll need this information to properly set up any programs specifically designed for computers with PowerPC microprocessors.
- If you want to turn off your computer, see "Turning the Computer Off" later in this chapter.

IMPORTANT If you need to turn off your computer at any point, please see "Turning the Computer Off" later in this chapter. It is very important to use the correct procedure for shutting down your Macintosh before turning it off.

Before you begin working with your computer, be sure to read the important health and safety information in Appendix A.

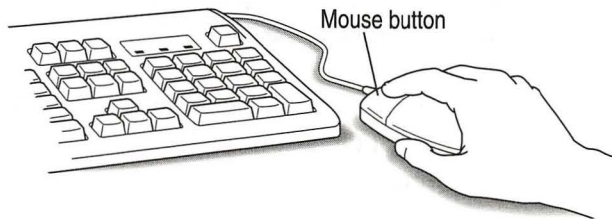
Learning the basics in the Performa tutorials

Read this section if you haven't already gone through Mouse Skills or the Performa Tutorial that appeared on your screen when you first turned on your computer, or if you want to go on to Part 2 of the Performa Tutorial. These programs teach you the basic skills you'll need to use your computer.

To start the Performa Tutorial, Tutorial Part 2, or Mouse Skills once you are past the introductory "welcome screens," follow these steps:

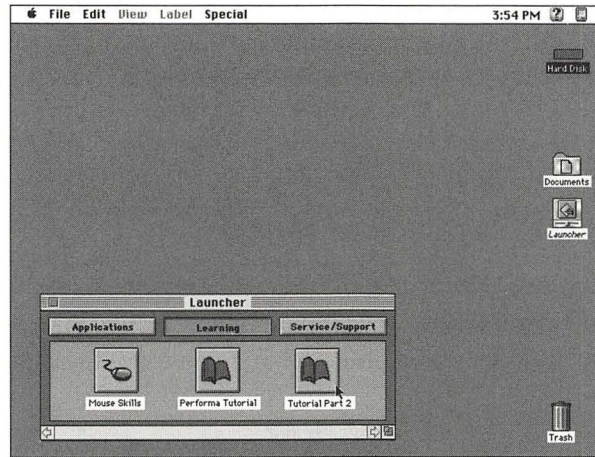
1 Slide your mouse along your mouse pad or desk.

Hold the mouse as shown, with the cable pointing away from you. Don't press the mouse button (under your index finger). Notice that the arrow (↔) on the screen moves in the same direction that you move the mouse.



If the arrow doesn't move, make sure that the cables connecting the mouse and keyboard are secure and that your mouse is positioned as shown in the illustration.

- 2** Move the mouse so that the arrow (↔) is over the picture of the particular tutorial you want to take.



If you don't see the Performa Tutorial, Tutorial Part 2, or Mouse Skills pictures on your screen, put the arrow on the word "Learning" and click (press and release) the mouse button.

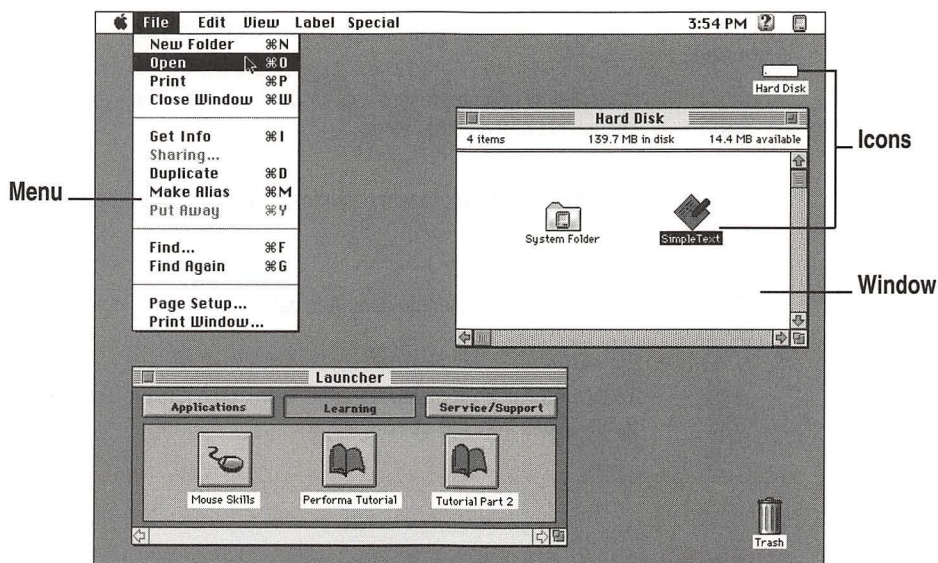
If you run out of room on your mouse pad or desk while moving the mouse, pick up the mouse and place it where there's more room. (The arrow on the screen moves only when the mouse is in contact with the mouse pad or desk.)

- 3** Click the mouse button on the picture of the tutorial you want to take.

A window appears welcoming you to the tutorial. You can set this book aside for now and follow the instructions on the screen. When you have completed both parts of the tutorial, return to this book.

Reviewing the basics

Use the following illustrations to review the elements on your screen with which you work on your computer.

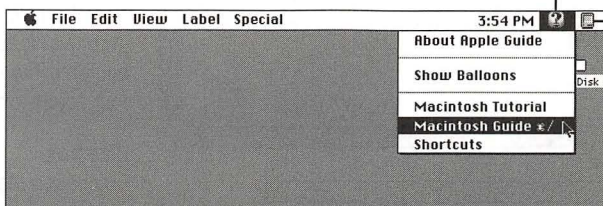


Menus

The strip across the top of the screen is called the menu bar. The symbols and words in it represent “menus” (lists) of commands. To open a menu, place the pointer on the symbol or word for the menu and press the mouse button.

Guide menu

To find an answer to a question, look in the Guide (?) menu.



Application menu

You can have several applications open at once. To see which program is active or to switch from one program to another, use this menu (called the Application menu).

Icons

Icons are small pictures that represent disks, programs, documents, and folders. You can double-click any icon to open it and see what it contains.



This icon represents your computer's internal hard disk.



Icons like this one represent application programs, which you use to create documents and do other work.



Icons like this one represent documents, which you can create and edit.



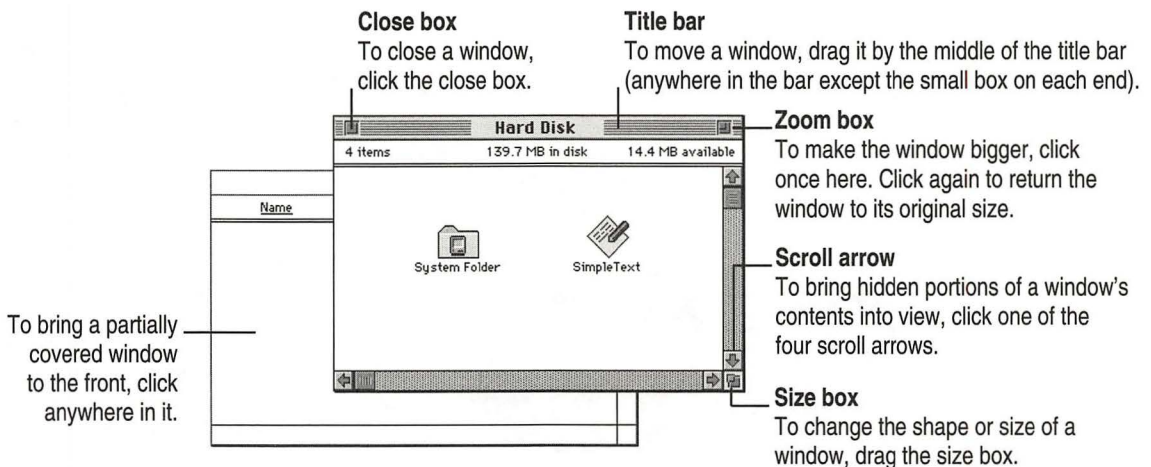
Icons like this represent folders. A folder contains other icons.



To throw away an item you no longer want, drag it to the Trash icon and choose Empty Trash from the Special menu.

Windows

Windows are boxes that display text, graphics, and icons. To change the shape or position of a window, or to close the window, use the elements shown here.

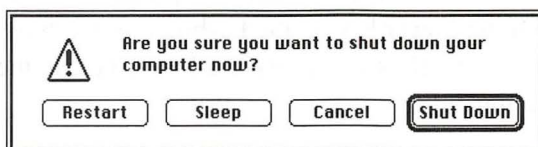


Turning the computer off

To turn the computer off using the Power key on the keyboard, follow these instructions:

- 1 If the computer is in sleep mode (the monitor is on but the screen is dark), press any key except Caps Lock to wake it.
- 2 Press and hold the Power key on the keyboard for about 2 seconds.

The following dialog box appears on the screen:



- 3 Press the Return key on the keyboard (or click the Shut Down button in the dialog box).

You can also turn off your computer by choosing Shut Down from the Special menu. Detailed instructions follow.

Note: If you are still in the welcome screens (the introductory screens that appeared when you turned on your computer for the first time), use the Power key to turn off your computer, as described above.

- 1 Move the tip of the arrow (⌘) to the Special menu at the top of the screen.
- 2 With the tip of the arrow on the word "Special," press and hold down the mouse button.
- 3 While holding down the mouse button, move the arrow down the list of choices until the words "Shut Down" are highlighted, then release the mouse button.



If you can't shut down your computer

If a problem with the computer prevents you from using the Power key on the keyboard or choosing Shut Down—for example, if the computer “freezes” so that the pointer does not respond to the mouse—you can turn off the computer by pressing the standby power button (⏻) on the back of the computer.

IMPORTANT You could lose unsaved work if you use the standby power button on the back of the computer to turn it off. Only use the standby power button when there is a problem that prevents the computer from being turned off with the Power key on the keyboard or the Shut Down command. To make sure your work is saved, use the Power key on the keyboard or the Shut Down command.

Turning the computer on

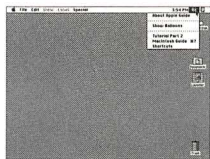
To turn on the computer after you've shut it down (using either the Power key on the keyboard or the Shut Down command):

- **Press the Power key (marked with a ⏻) on the keyboard.**


Note: Your monitor may have to be turned on separately each time you turn on the computer. If you have trouble turning on your computer, see the section “Problems Turning On Your Computer?” earlier in this chapter.

Where to find answers

When you have questions about using your Macintosh, there are several places where you can look for answers.



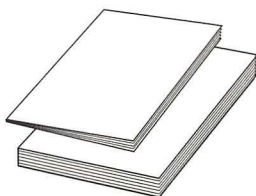
In the Guide menu

The Guide menu (marked with the  icon) is your main source of information about the Macintosh. To learn how to get different kinds of help from the Guide menu, see Chapter 2 in this book.



In this book

Use this book to help you set up your computer and learn about it, or to find solutions to problems with your equipment.



In other manuals

Some of the programs that already came installed on your computer have separate manuals. Most of these manuals came in the box with your computer. Some come online. (You can find them as clickable buttons in the Applications section of the Launcher, next to their application buttons.) For answers to questions about other equipment or about application programs you have purchased, see the manuals that came with the equipment or programs.



About Apple Extras

From the Read Me files in the Apple Extras folder

The Apple Extras folder (in your System Folder) on your hard disk contains SimpleText documents, called About Apple Extras with important information about some of the application programs included with your computer. Similar files called Read Me files can also be found inside application folders and in the Documents folder on your desktop.



From Apple's customer support hotline

If you can't find an answer in any of the materials provided, call the customer support hotline. The phone number for the hotline is in the service and support information that came with your computer.

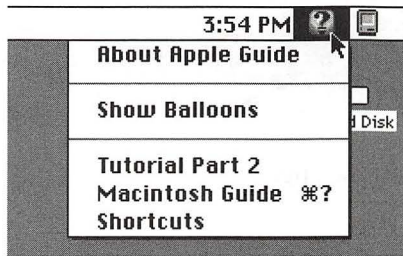
Note: If you have problems with an application program not published by Apple, call the program's publisher. Click the Phone Numbers button in the Service/Support area of the Launcher to get a software publisher's phone number.

Use the instructions in this chapter to learn about the help available to you in the Guide menu.

2

Getting Help

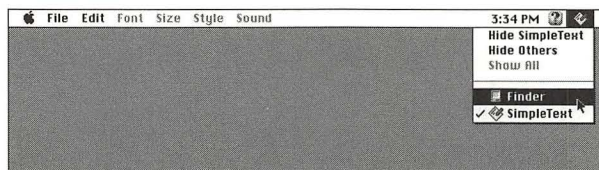
The Guide menu is your main source of information when you're working with your computer. The menu is identified by a question mark (⌘?) in the upper-right corner of the screen.



Getting answers to your questions

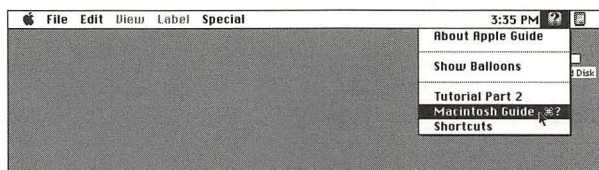
When you have a question while working with your computer, you can get the answer by choosing Macintosh Guide from the Guide menu.

- 1 Pull down the Application menu (in the upper-right corner of the screen) and choose Finder to make it the active application program.

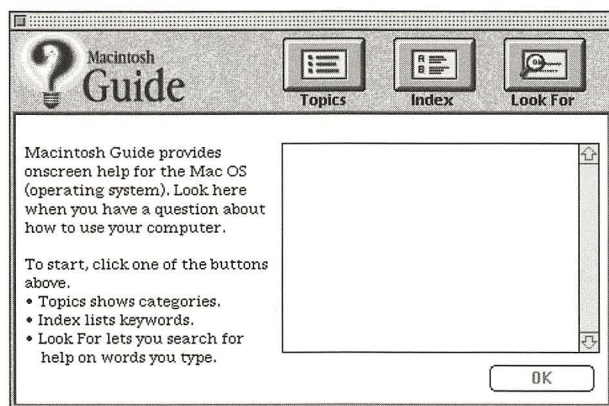


A checkmark in the menu indicates that the Finder is the active program.

- 2 Pull down the Guide menu (marked with the ? icon) and choose Macintosh Guide.

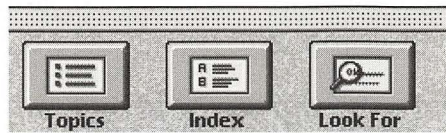


The Macintosh Guide window appears.



Whenever you use Macintosh Guide, its window remains in front of other windows. If the window gets in your way, you can move it by dragging its title bar (the gray bar across the top of the window).

- 3 Notice the three buttons at the top of the window: Topics, Index, and Look For.



Macintosh Guide gives you three ways of finding information:

- **Topics** lets you choose from a list of general subjects; it is like the table of contents in a book.
- **Index** lets you choose from an alphabetical list of more specific subjects; it is like the index in a book.
- **Look For** lets you search for information related to a specific word or phrase that you type.

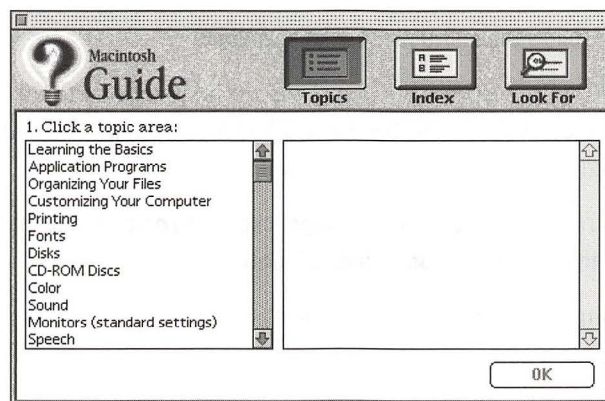
In the following sections you will practice using each method.

If you have problems while using Macintosh Guide, see “Tips for Using Macintosh Guide” later in this chapter.

Getting answers with the Topics button

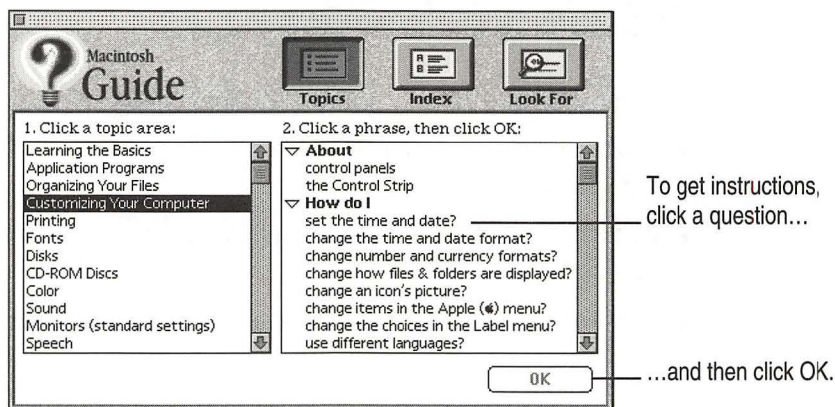
- 1 In the Macintosh Guide window, click the Topics button.

A list of general topics appears on the left side of the Macintosh Guide window. (Depending on the hardware and software you have, the list of topics may look different.)



2 In the list of topics, click “Customizing Your Computer.”

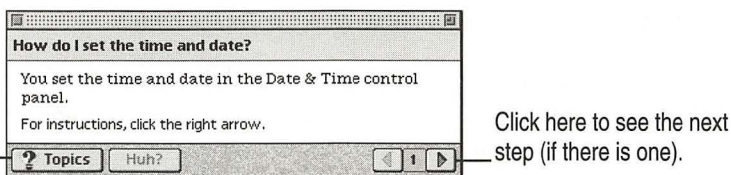
When you click any topic area, a list of related questions appears on the right side of the Macintosh Guide window.



3 Click the question “How do I set the time and date?” and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.

If you want to return to the main Macintosh Guide window, click this button.



4 Read and follow the instructions in this window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

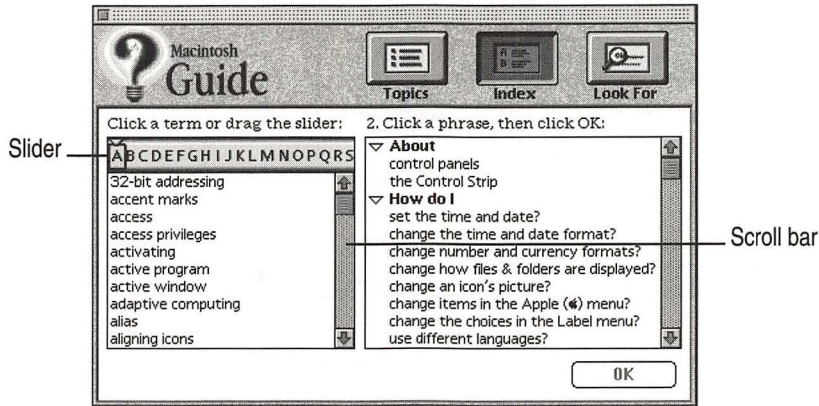
5 When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.

Now continue with the next section.

Getting answers with the Index button

- 1 In the Macintosh Guide window, click the Index button.

An alphabetical list of subjects appears on the left side of the window.

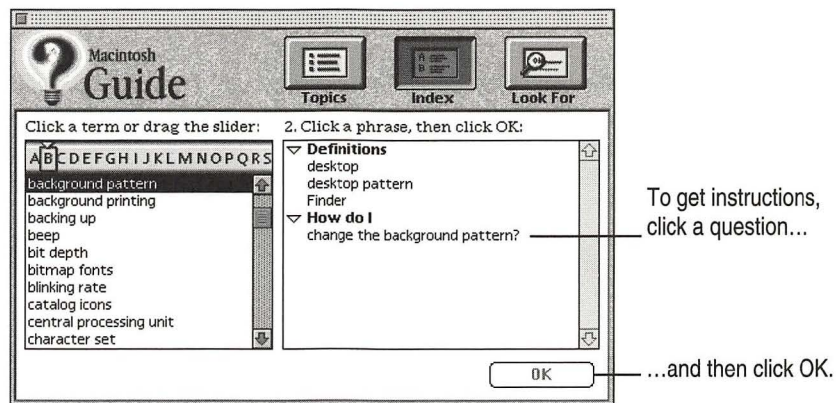


- 2 Scroll through the alphabetical list until the phrase “background pattern” is visible.

You can scroll through the list either by dragging the slider to the letter *B* or by using the scroll bar at the right of the list.

- 3 Click the phrase “background pattern” in the alphabetical list.

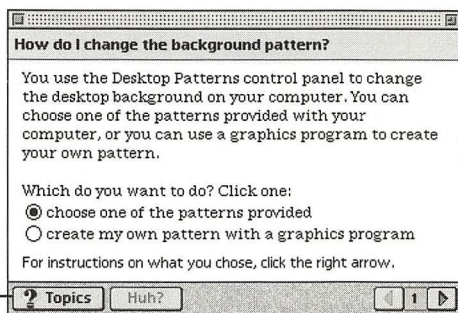
When you click any index entry, a list of related questions appears on the right side of the Macintosh Guide window.



- 4** Click the question “How do I change the background pattern?” and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.

If you want to return to the main Macintosh Guide window, click this button.



Click here to see the next step (if there is one).

- 5** Read and follow the instructions in the window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

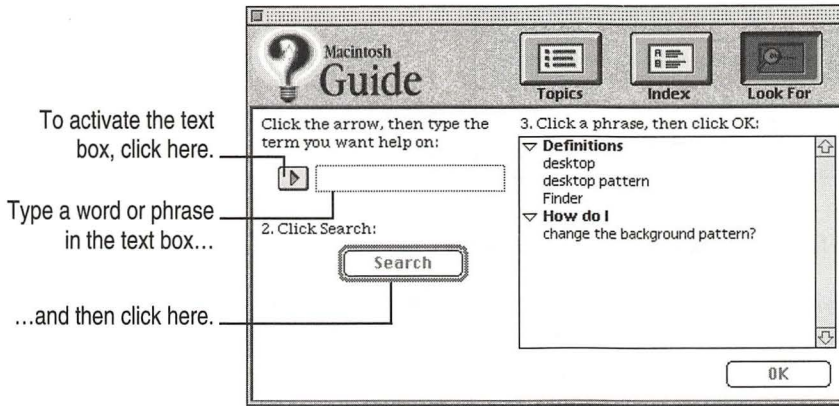
- 6** When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.

Now continue with the next section.

Getting answers with the Look For button

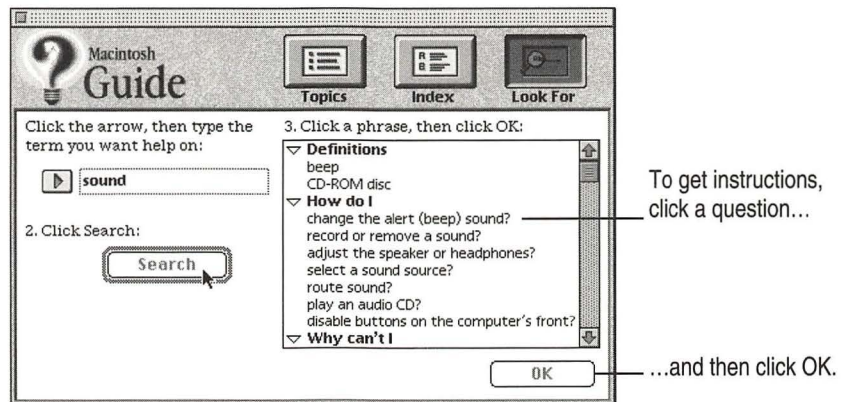
- 1 In the Macintosh Guide window, click the Look For button.

A small box appears on the left side of the window, where you can type text.



- 2 Click the arrow button to activate the text box.
- 3 Type "sound" in the text box and then click Search.

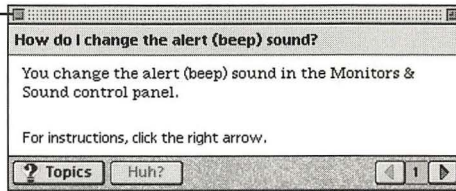
When you click Search, a list of questions related to the word or phrase you typed appears on the right side of the Macintosh Guide window.



- 4 Click the question “How do I change the alert (beep) sound?” and then click OK. Or double-click the question.

A small window appears with instructions for you to follow.

If you want to close
Macintosh Guide,
click here.



Click here to see the next
step (if there is one).

- 5 Read and follow the instructions in the window.

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to display the next step.

- 6 When you have completed all the steps, click the close box in the upper-left corner to close Macintosh Guide.

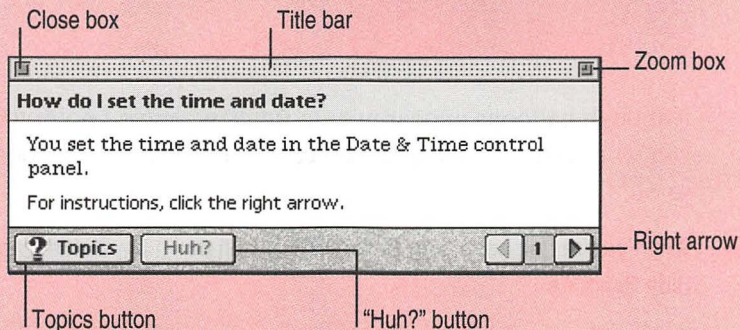
Tips for using Macintosh Guide

Here are a few tips for using Macintosh Guide effectively:

- Macintosh Guide is available only when you are in the Finder—the desktop area where you can see the icons of disks, folders, and files. (Other programs may also have help available in the Guide menu, however.) If you don't see Macintosh Guide in the Guide menu, pull down the Application menu (to the right of the Guide menu) and choose Finder.
- Follow the steps when you're instructed to; don't skip ahead or read ahead. That way the computer can check to make sure you've done a step correctly.
- Unlike most windows, the Macintosh Guide window stays in front of other windows on the screen so that your instructions are never covered. If you need to move the Guide window out of the way, drag it by the title bar at the top of the window.

You can also move the window out of the way by clicking the zoom box. Click the box once to shrink the window; click it a second time to expand the window to its original size.

- If you need more information about an instruction or a term, click the button labeled “Huh?” to get a further explanation. (The “Huh?” button is dimmed when no additional information is available.)
- If you want to return to the main Macintosh Guide window, click the Topics button in the lower-left corner of the Guide window.
- When you're finished using Macintosh Guide, click the close box in the upper-left corner of the window.



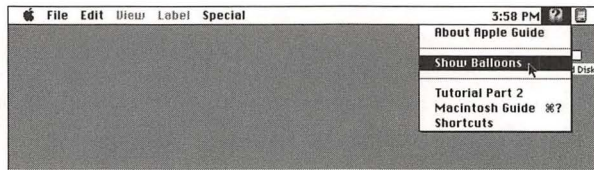
Identifying what's on your computer screen

Sometimes you'll see an unfamiliar item on the screen and ask yourself, "What's that?" You can get an answer by using a Macintosh feature known as Balloon Help.

Using balloons like those you see in comic strips, Balloon Help explains the function of icons, menus, commands, and other items on the Macintosh screen.

Follow these steps to use Balloon Help:

- 1 Pull down the Guide menu (marked with the  icon) and choose Show Balloons.



- 2 Point to any object on the screen that you want to identify.

A balloon appears next to the object. In the following illustration, for example, pointing to the Trash displays a balloon that explains how to use the Trash to throw items away.




Although balloons appear next to items when you point to them, the way you work does not change; you can still select icons, choose commands, and so on.

- 3 When you're finished using Balloon Help, pull down the Guide menu again and choose Hide Balloons.

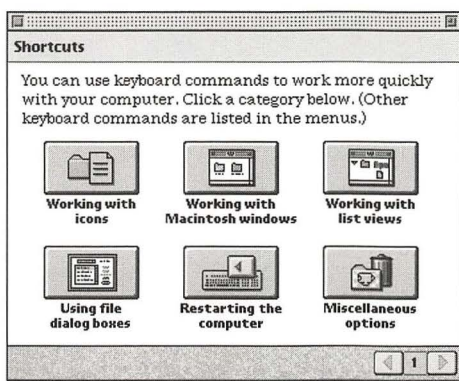
Learning useful shortcuts

You can perform many tasks in the Finder more quickly if you use keyboard or mouse shortcuts. For example, instead of clicking an icon and choosing Open from the File menu, you can simply double-click the icon to open it.

Follow these steps to learn keyboard and mouse shortcuts:

- 1 Pull down the Guide menu (marked with the  icon) and choose Shortcuts.

The main Macintosh Shortcuts window appears.

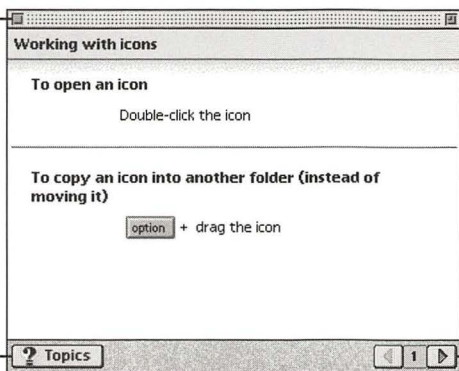


- 2 Click one of the category buttons.

Another window appears, describing shortcuts for that category.

If you want to close the window, click here.

Click the Topics button to return to the main Macintosh Shortcuts window for more categories.



Click here to see the next window (if there is one).

- 3 Read about the shortcuts available for the category you selected.**

Click the right arrow in the lower-right corner of the window to display the next window (if there is one).

- 4 When you finish reading about the shortcuts for your category, click the Topics button in the lower-left corner to return to the main Macintosh Shortcuts window. Or click the close box in the upper-left corner to close the window.**

Read this chapter for information
on expanding your computer system
with additional hardware.

3

Connecting Equipment and Expanding Your Computer

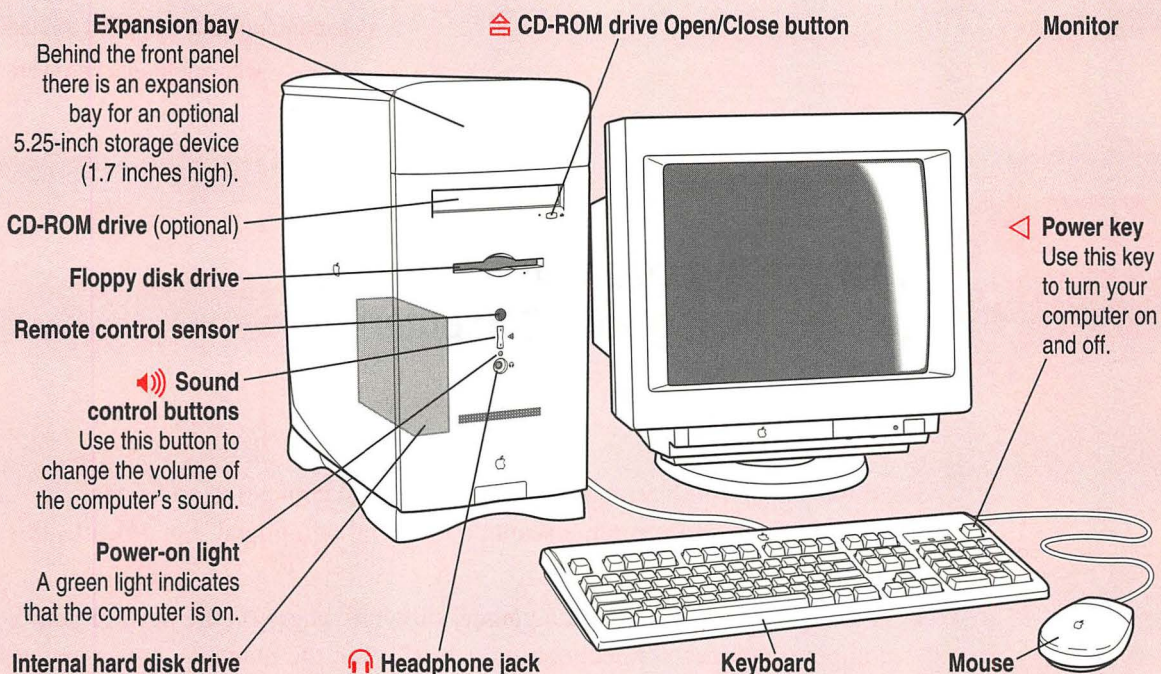
.....

Read this chapter to learn how to connect your Macintosh to additional equipment, such as a printer, a scanner, or sound equipment. Specifically, this chapter contains:









- A view of your computer at a glance, showing where on the back of your computer you can connect equipment. (Consult the manuals that came with the other equipment for complete instructions.)
- Information about your computer's sound capabilities.
- Information about connecting other specialized equipment, called "SCSI" devices.

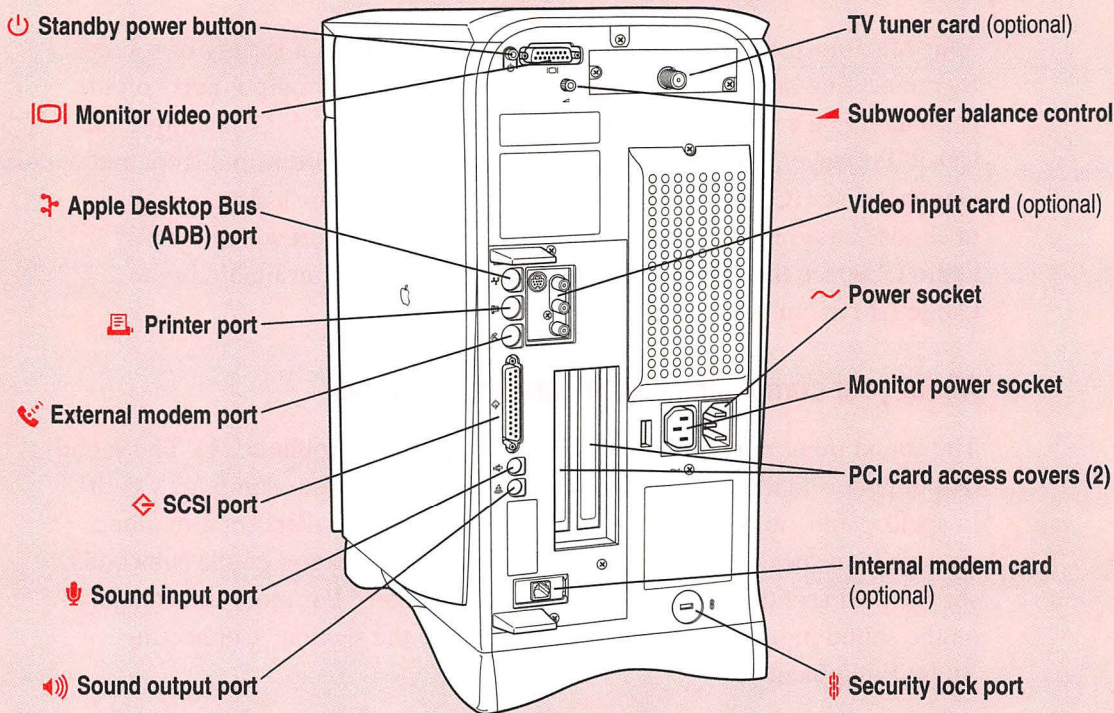
For information on connecting equipment for even more specialized purposes, such as connecting to a network or to a TV or video equipment, see Chapter 8.

WARNING Before you connect any equipment to your computer, make sure that your computer is plugged in (in order to ground the computer) and turned off. If you connect equipment with the computer turned on, you can damage your computer and your equipment.



Ports and connectors on the back of your computer

Standby power button		Turns your computer on or off when you can't use the Power key on the keyboard or the Shut Down command.
Monitor video port		Connects your monitor to your Macintosh.
Apple Desktop Bus (ADB) port		Connects your Macintosh to an input device, such as a keyboard or a trackball.
Printer port		Connects your Macintosh to a printer, LocalTalk network, or GeoPort device.
External modem port		Connects an external modem or GeoPort adapter to your Macintosh. (Note: If your computer has an internal modem, this port is covered. Don't remove the cover or connect anything to this port if you have an internal modem.)
SCSI port		Connects your Macintosh to SCSI equipment, such as external hard disk drives and scanners.
Sound input port		Connects your Macintosh to another audio source, such as a microphone, compact disc, or audio cassette player.
Sound output port		Connects your Macintosh to sound output equipment, such as externally powered (amplified) speakers.



TV tuner card
(optional)

Connects your Macintosh to an external TV antenna or cable TV service. (*Note:* The TV tuner card on your computer, if you have a card installed, may look different.)

Subwoofer balance control



Adjusts subwoofer balance in relation to external speakers, if external speakers (including a monitor with built-in speakers) are attached. (If external speakers are not attached, the balance control does not affect the subwoofer volume.)

Video input card
(optional)

Connects your Macintosh to a video camera, VCR, or other video input equipment.

PCI card access covers (2)

Cover ports for optional 6.88-inch PCI (peripheral component interconnect) slot expansion cards (such as a video-editing card).

Internal modem card
(optional)

Covers port for optional communication card (such as an internal modem card or Ethernet card). You may have a modem card installed in this slot already.

Security lock port



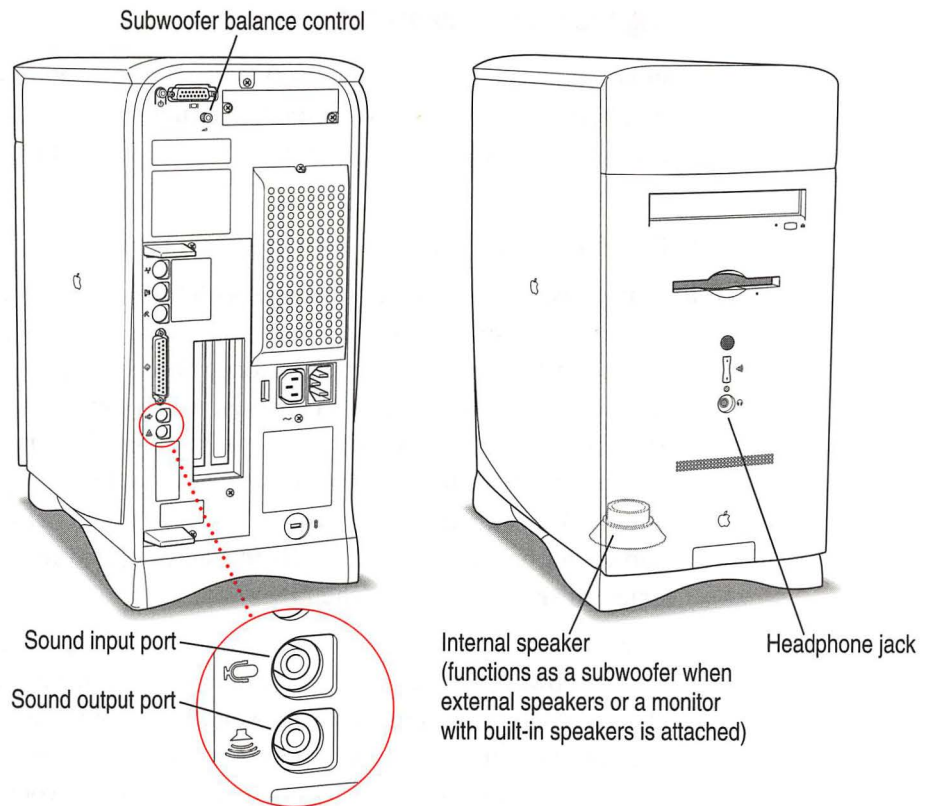
Enables you to attach a security lock to your Macintosh. See your computer products retailer for security lock devices that work with your computer.

Using your computer's sound features

Your Macintosh can play and record stereo sound from a variety of sources. By connecting audio equipment to the sound input and output ports on the computer, you can listen to or reproduce stereo sound. If it has an internal CD-ROM player, your computer can also play and record sound from audio compact discs (CDs). For information on using Macintosh system software to choose audio input and output options, record an alert sound, or play audio CDs, see the “Sound” topic of Macintosh Guide, available in the Guide (🔍) menu.

About your computer's sound ports and features

The sound input port is marked with an icon of a microphone (🎤). The sound output port is marked with an icon of a speaker (🔊). Your computer's built-in speaker functions as a subwoofer when external speakers (or a monitor with built-in speakers) are attached. For more information on the subwoofer, see the next section, “Using the Built-in Subwoofer.” For more information on the sound input and sound output ports, see the section “Connecting Audio Equipment.”



Using the built-in subwoofer

Your computer comes with a built-in speaker that produces full-range, monophonic sound. When you attach external speakers, this speaker changes mode and functions as a subwoofer, adding bass sound to augment the speakers' stereo sound.

Follow these tips about your computer's subwoofer:

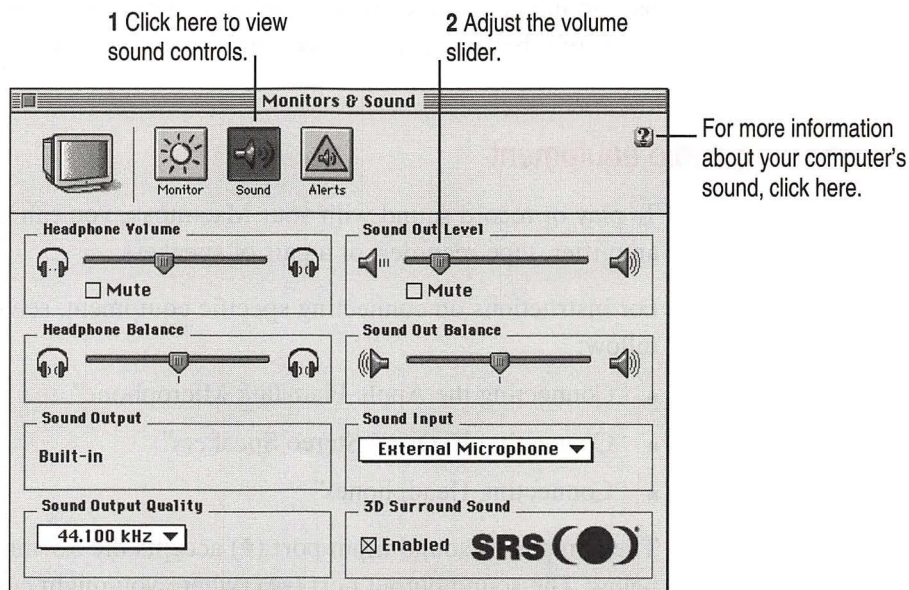
- You adjust your computer's volume with the volume controls on the front of the computer or with the Monitors & Sound control panel in the computer's software. (For more information, see "Adjusting Volume and Sound" later in this section.) However, when you attach external speakers (or if your monitor has built-in speakers), you adjust the subwoofer volume independently of the speaker volume. You do this by adjusting the subwoofer balance control (▲) on the back of the computer. (The subwoofer balance control affects the subwoofer volume *only* when external speakers are attached.)
- If your monitor has a headphone jack and you plug your headphones into it, the subwoofer sound might continue to come from the computer rather than through the headphones. To avoid this, plug the headphones into the jack on the front of the computer. If you prefer to keep the headphones plugged into your monitor, manually lower the subwoofer volume by turning the subwoofer balance control (▲) counterclockwise. Remember to turn it back up again when you are finished using the headphones.

Adjusting volume and sound

There are several ways to adjust the volume on your computer:

- Use the volume controls on the front of the computer (marked with the 🔊 icon, above the power-on light).
- Use the volume controls on the front of your monitor if your monitor comes with built-in speakers.
- Use the volume control slider in the AppleCD Audio Player if you are playing an audio CD. The AppleCD Audio Player can be found in the Apple (🍏) menu.

- Use the volume control sliders in the Monitors & Sound control panel, which is in the Control Panels folder in the Apple () menu.



Note: Some monitors also place a “Monitor Sound” icon at the top of the Monitors & Sound control panel.

Tip: You may prefer to set the Sound Out Level slider in the Monitors & Sound control panel to the middle of the slider bar. This makes it easier for you to gauge the adjustments you make with other volume controls.

For more information about sound, see the “Sound” topic of Macintosh Guide, available in the Guide (🔍) menu.

Listening with 3D Surround Sound

The **SRS** (●) 3D Surround Sound technology broadens the sound you hear if you attach external speakers or if your monitor has built-in speakers. 3D Surround Sound makes the speakers sound as if they are set wider apart, and you can hear many “points” of sound around you. (3D Surround Sound may not work through headphones. Click to remove the checkbox next to “Enabled” in the Monitors & Sound control panel to disable 3D Surround Sound.)

Using a monitor with built-in speakers

If you have a monitor with built-in speakers, you can adjust the amount of bass sound you hear coming from the computer's subwoofer by adjusting the subwoofer balance control (◄) on the back of your computer.

Connecting audio equipment

To play or record sound with your Macintosh, you can attach a microphone, amplifier, tape recorder, or a pair of speakers.

For instructions on connecting specific equipment, see the sections that follow:

- “Connecting the Apple PlainTalk Microphone”
- “Connecting External Stereo Speakers”
- “Connecting Headphones”

The computer's sound input port (🎧) accepts the 3.5-mm audio connectors below. The sound output port (🔊) (where you might connect external speakers) accepts only the stereo miniplug.



Stereo miniplug
(plugs into sound input port
or sound output port)



Extended miniplug
(plugs into sound input port)

The stereo miniplug is found most often on stereo equipment (such as external speakers). The extended miniplug, which is slightly longer and is found on voice quality microphones (such as the Apple PlainTalk Microphone), works only in your computer's sound input port (🎧). (Even though it will fit into the sound output port, it won't work there.) If your equipment has a different type of connector than those shown here, you can purchase an adapter at an electronics supply store.

Follow these general instructions when connecting audio equipment to the Macintosh:

- 1 Make sure that the audio equipment has a cable with a stereo miniplug connector.**

If it does not, attach an adapter that has a stereo miniplug.



Stereo miniplug

- 2 Place the audio equipment near the Macintosh.**
- 3 Shut down the Macintosh and turn off the audio equipment.**
- 4 Attach the cable to the audio equipment and to the appropriate sound port on the Macintosh.**

To record incoming sound on the computer, connect the audio equipment to the sound input port (🎧).

To record the sound produced by the computer or play that sound through external speakers, connect the audio equipment to the sound output port (🔊).

- 5 Turn on the computer and the audio equipment.**

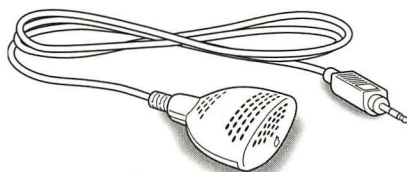
You're now ready to begin listening to and working with sound.

You can adjust the volume using the sound control buttons on the front of the computer or by using the Monitors & Sound control panel, which uses software inside your computer to adjust sound. See "Adjusting Volume and Sound" in the previous section, "Using Your Computer's Sound Features."

Connecting the Apple PlainTalk microphone

Your computer has a sound input port (🔊), which you can use to connect an Apple PlainTalk Microphone. The Apple PlainTalk Microphone is included with some computer models. If your computer did not include an Apple PlainTalk Microphone, you can purchase one at an Apple-authorized dealer. You cannot connect non-Apple microphones.

Note: The sound input port does not support the Apple Omni microphone (the round microphone shipped with some earlier models of Macintosh) or the attenuated RCA adapter provided with some models of Macintosh.



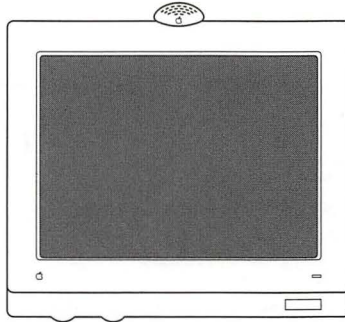
Apple PlainTalk Microphone

To connect and position the external microphone, follow the steps below.

Note: If you want to record sound using a microphone built in to a monitor, see the “Sound” topic of Macintosh Guide, available in the Guide (🔍) menu. Then select the subtopic, “How do I record or remove a sound?”

- 1** Shut down the Macintosh.
- 2** Plug the microphone's connector into the sound input port (🔊) on the back of the computer.

- 3** Place the microphone at the top center of the monitor, so that the microphone's Apple (🍏) icon is facing you.



If you can't place it on top of the monitor, position the microphone according to these guidelines:

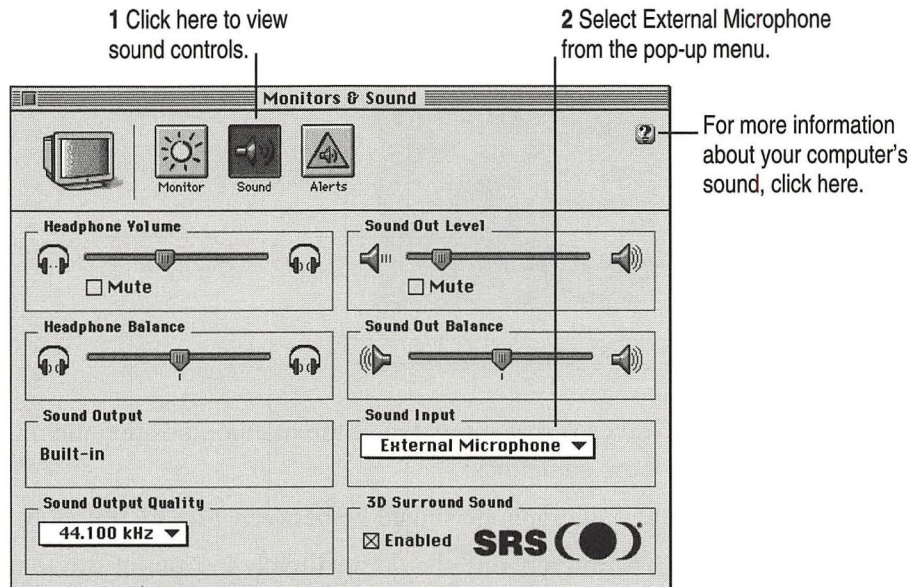
- The microphone should be between 1 and 3 feet away from you.
- The microphone should be directly in front of you to minimize the effect of background noises.

- 4** Turn on the computer.

Next, you need to make sure the Sound Input source in your computer is set to "External Microphone."

- 5** Open the Monitors & Sound control panel in the Apple (🍏) menu and click the Sound icon.

- 6** Click the Sound Input pop-up menu and select “External Microphone.”



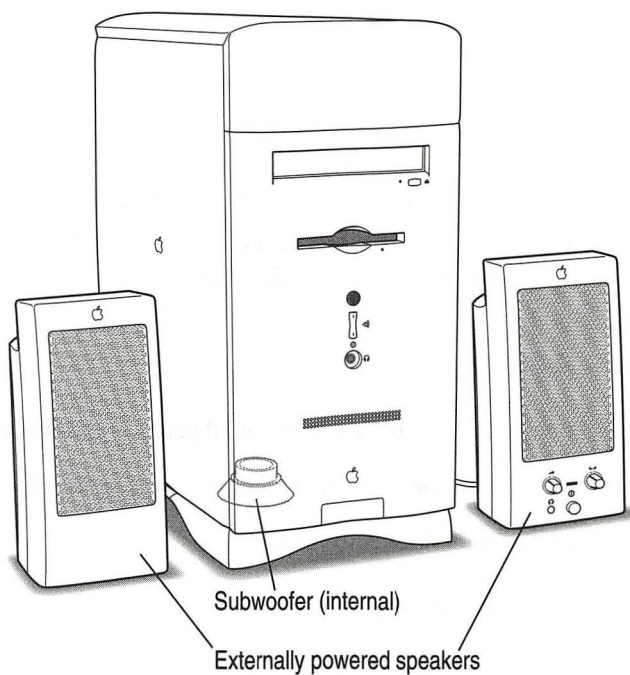
- 7** Click the close box in the upper-left corner of the Monitors & Sound control panel to close it. (The control panel does not have to remain open while you're recording.)

You're now ready to begin using your microphone.

See the “Sound” topic of Macintosh Guide, available in the Guide (📖) menu, for instructions on recording.

Connecting external stereo speakers

You can take advantage of your computer's stereo sound output by attaching externally powered (amplified) speakers. When you attach external speakers, the speaker in your computer changes mode and functions as a subwoofer. The subwoofer produces bass sound to complement the stereo sound coming from the speakers.



1 Assemble the speakers and the cable you need.

You need a cable with a stereo miniplug at one end to connect one or both speakers to the computer.



Stereo miniplug

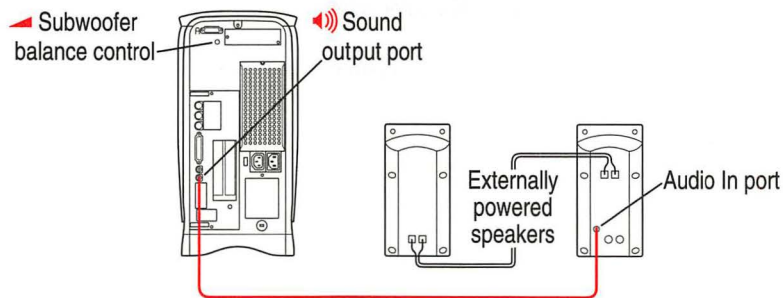
Some speakers require a dual-plug adapter. Others, like those shown in the next illustration, accept a single stereo miniplug and are joined by standard speaker wires. See the documentation that came with your speakers for more information.

2 Turn off the Macintosh.

3 Plug the stereo miniplug into the sound output port (⏮) on the Macintosh.

4 Connect the speakers together with speaker wires, if necessary.

Your finished connections should look something like this:

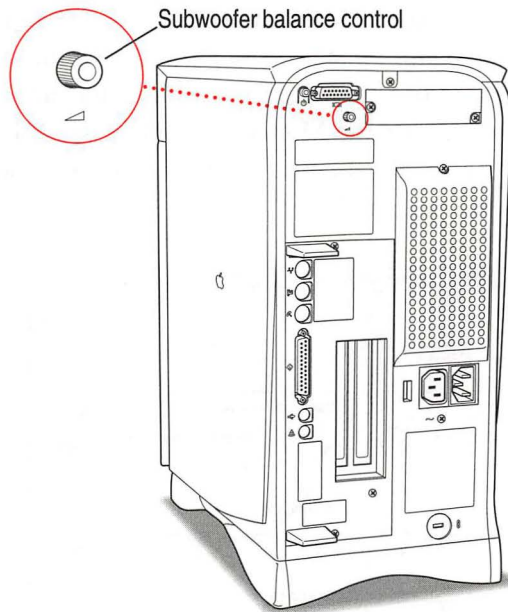


5 Turn on the computer.

Now you're ready to hear full-range stereo sound coming from the speakers and bass sound coming from the computer's internal subwoofer.

To adjust the overall volume, use the sound control buttons on the front of the computer or use the Monitors & Sound control panel, which uses software inside your computer to adjust volume. (For more information, see "Adjusting Volume and Sound" in the previous section, "Using Your Computer's Sound Features.")

To adjust the subwoofer volume independently of the speaker volume, use the subwoofer balance control (▲) on the back of the computer. (The subwoofer balance control works only when external speakers or a monitor with built-in speakers is attached.)



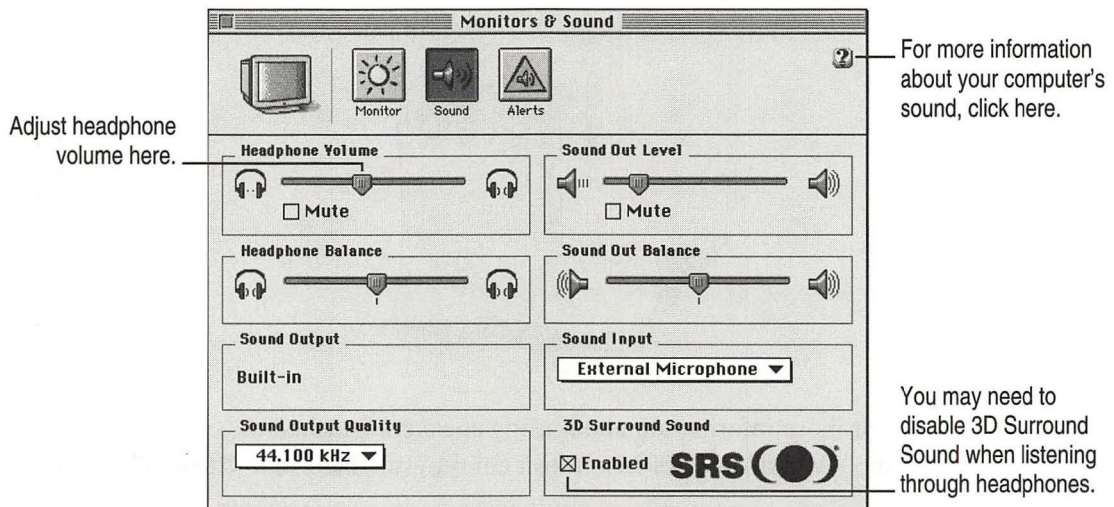
For more information about using speakers attached to your computer, see the "Sound" topic of Macintosh Guide, available in the Guide (?) menu.

Connecting headphones

You connect headphones to the headphone jack (🎧) on the front of the computer or to your monitor if it has a headphone jack.

If you use the headphone jack on your monitor: When you plug headphones into the headphone jack on your monitor (if your monitor has one), sound comes through your headphones but, depending on the type of monitor you have, it may also continue to come out of the subwoofer. To stop this, plug your headphones into the headphone jack (🎧) on the front of the computer, not the headphone jack on the monitor. However, if you prefer to plug the headphones into the monitor, silence the subwoofer by manually turning down the subwoofer balance control (◀) on the back of the computer all the way. Also, when you're finished using the headphones, remember to turn it back up.

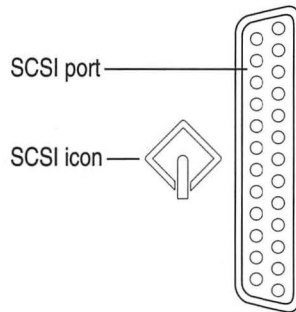
Note: You may also want to disable **SRS** (●) 3D Surround Sound in the Monitors & Sound control panel if you are listening through headphones. 3D Surround Sound does not always work through headphones. To disable 3D Surround Sound, open the Monitors & Sound control panel in the Control Panels folder in the Apple (🍏) menu and click the checkbox to remove the checkmark next to “Enabled.”



For more information on listening with headphones, see the “Sound” topic of Macintosh Guide, available in the Guide (🔍) menu.

Connecting external SCSI devices, such as a scanner or external hard disk

Your computer has a port for connecting devices that use the Small Computer System Interface (SCSI, pronounced “skuh-zee”). SCSI devices commonly used with the Macintosh include hard disk drives, CD-ROM drives, scanners, tape or cartridge backup drives, and some printers. The SCSI port permits high-speed communication between the computer and the device. The SCSI icon appears to the left of the port on the computer’s back panel.



You can connect SCSI devices to the SCSI port in a chain. The first device in the chain plugs into the SCSI port; the second device plugs into the first device, and so on. You can attach up to six external SCSI devices to the SCSI port. All SCSI devices connected to this chain must have their own unique ID number (no two devices can use the same ID number). If your computer came with a CD-ROM drive installed, this drive is also part of the SCSI chain and uses SCSI ID number 3. The computer itself (the main logic board inside it) uses SCSI ID number 7.

IMPORTANT The material that follows—“Before You Connect a Device” and “Connecting a SCSI Device”—contains general instructions for attaching SCSI devices to your computer. Make sure you also follow the specific instructions that came with the SCSI device you are connecting to your Macintosh.

Before you connect a device

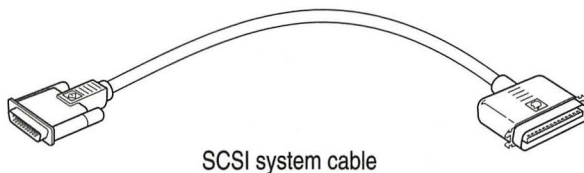
Before you connect a SCSI device to your Macintosh, complete these tasks:

- Make sure each SCSI device connected to your Macintosh has its own unique ID number from 0 to 6. The computer itself (the main logic board inside it) has the ID number 7 and the internal CD-ROM drive has the ID number 3, making the ID numbers 0, 1, 2, 4, 5, and 6 available for additional SCSI devices. Make sure other SCSI devices you add to the chain do not use ID numbers 3 or 7. See the instructions that came with each SCSI device for information on checking and setting its SCSI ID number.

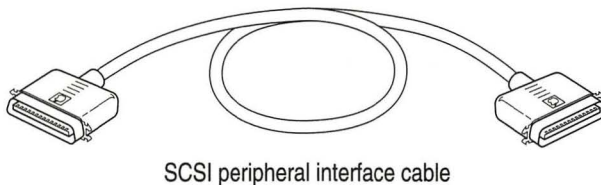
IMPORTANT If you use two or more devices attached to the same SCSI interface with the same ID number, your equipment could malfunction and you could lose data as a result.

- Make sure you have the appropriate cable for attaching the SCSI device to your Macintosh.

If the device is the first or only one you're connecting, use a SCSI system cable to connect it to the computer's SCSI port:



If the device is not the first one, use a SCSI peripheral interface cable to connect it to the last device in the chain:

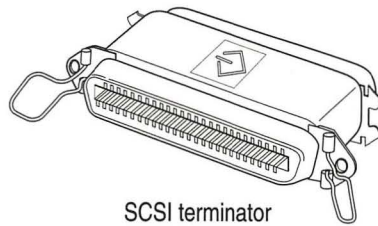


IMPORTANT The total length of the cables in a SCSI chain should not exceed 6 meters (20 feet). SCSI cables must have a 110-ohm impedance. For best results, use SCSI cables manufactured by Apple Computer.

- Make sure that the last (or only) device in the SCSI chain has a terminator. Make sure that no other external SCSI device has a terminator.

To ensure accurate transmission of information, a terminator must be at each end of a SCSI chain. Your computer's main logic board, which is the first device in the chain, has a built-in terminator.

Some external SCSI devices from manufacturers other than Apple have built-in terminators. (Check the information that came with the device.) If the device at the end of the SCSI chain does not have a built-in terminator, you need to attach an external terminator.



SCSI terminator

If your SCSI device has a built-in terminator, use it as your last device in the chain or have your Apple-authorized service provider remove the extra built-in terminator. You can attach or remove external terminators yourself.

Connecting a SCSI device

Be sure to read the previous section, “Before You Connect a Device,” before following the instructions in this one.

Use these general instructions in conjunction with the instructions that came with your SCSI device:

- 1 **Turn off your Macintosh.**
- 2 **Make sure the SCSI device is switched off.**

WARNING Do not connect or disconnect any device while the device or your Macintosh is turned on. Doing so could damage the device, your computer, or both.

- 3 **Use a SCSI cable to connect the device either to the computer’s SCSI port or to the last SCSI device already in the chain.**

IMPORTANT Make sure that the last (or only) device in the SCSI chain has a terminator and that no other external SCSI device has a terminator. Otherwise, the computer may not be able to start up.

- 4 **Turn on all devices in your SCSI chain.**

IMPORTANT Always turn on any external SCSI devices connected to your Macintosh before turning on the computer itself. Otherwise, your computer won’t be able to recognize that the SCSI devices are connected to it and your computer may not be able to start up.

- 5 **Install any necessary device drivers (software that makes a device work with your computer).**

Drivers, software needed for a SCSI device, usually come on a floppy disk with the device. (If no drivers come with the device, contact the device manufacturer.)

Note: If you experience problems after connecting a SCSI device, see the troubleshooting information in Chapter 6 for possible solutions.

Expanding memory

For information on increasing your computer's memory, see Appendix B, "Installing Additional Memory."

Replacing or adding internal storage devices

Your Macintosh comes with three internal storage devices—a floppy disk drive, a CD-ROM (compact disc read-only memory) drive, and a hard disk drive (several capacities are available). If you want to replace any of these internal drives, see your Apple-authorized dealer.

Your computer also has an expansion bay—just behind the front panel, above the CD-ROM drive—for an additional, optional 5.25-inch storage device (1.7 inches high). Examples of storage devices include a second CD-ROM drive, a tape storage backup system, or a second internal hard disk. If you want to install another storage device inside your computer, see your Apple-authorized dealer.

Read this chapter to learn how to work
with application programs and protect
the information on your disks.

4

Using Programs and Backing Up Disks

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Your computer came with several application programs already installed. You open these programs by clicking their buttons in the Launcher. The Apple Extras folder on your hard disk also contains additional programs.

Backup copies of all preinstalled programs exist on the CD-ROM disc *Macintosh Performa CD: Performa Software*, which is included in the box with your computer. If you ever need to restore one or more of the preinstalled programs, see the section “Copying Files From the *Performa Software* CD-ROM Disc to Your Hard Disk” in Chapter 7. If you ever need to restore all of the preinstalled programs, start at the beginning of that chapter.

Installing application programs

You may want to buy and install additional application programs. See the manuals you receive with these programs for instructions on installing and using them.

To use your programs most effectively, follow these guidelines:

- Read the manuals you received with the program if you have problems using it.
- Put only one copy of each program on your hard disk. Having more than one copy can cause errors.
- Whenever you copy a program disk to your hard disk, be careful not to copy a System Folder.
- If a program malfunctions consistently, try installing a fresh copy. If that doesn't help, find out from the software manufacturer whether your version of the program is compatible with your computer model and the system software you're using.

Note: You may want to put your application programs in the Launcher. This way they are easier to find than when they are stored in the Applications folder on your hard disk and they can be accessed by a simple click of a Launcher button. To put a program in the Launcher, drag the program's icon (or its alias) into the Launcher window or onto the Applications category button in the Launcher. (If you need detailed instructions, see the "Tips & Features" topic of Macintosh Guide, available in the Guide [?] menu, and select "How do I use the Launcher?")

Installing programs from a floppy disk

In most cases, you install application programs on your internal hard disk from floppy disks. The following illustration shows how to insert a floppy disk into your computer's floppy disk drive.



For instructions on how to eject floppy disks, see the “Disks” topic of Macintosh Guide, available in the Guide (🔍) menu.

Installing programs from a CD-ROM disc

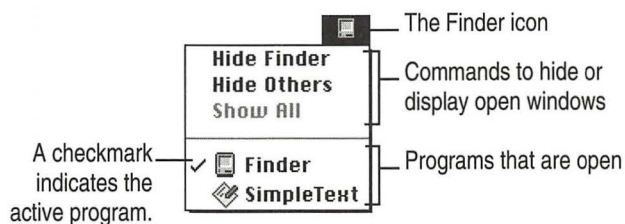
Sometimes you'll install an application program on your internal hard disk from a CD-ROM disc that contains the program. (For instructions on inserting and ejecting CD-ROM discs, see “Inserting a CD-ROM Disc” and “Ejecting a CD-ROM Disc” in Chapter 5.)

IMPORTANT Never copy an entire CD-ROM disc to your hard disk. (Don't drag the CD-ROM disc's icon to your hard disk.) When you open programs on some of the CD-ROM discs that came with your computer, you may get a message telling you to copy or install the program onto your hard disk. If you get this message, double-click the CD-ROM disc's icon to open it, and then copy the CD-ROM disc's program to your hard disk. Look for any “read me” or “information” files on the CD-ROM disc for instructions. Copying the CD-ROM disc itself will take up a lot of memory on your hard disk.

Working with several programs at a time

You can open as many application programs and desk accessories as your computer's memory allows.

All open programs are listed in the Application menu at the right end of the menu bar. You can find out which program is active and which other programs are open by pulling down the Application menu. The name of the active program (the one you're using right now) has a checkmark next to it, and its icon appears in the menu bar.



Switching programs

You can switch to another open program or desk accessory by choosing its name from the Application menu.

If a program's icon is dimmed in the Application menu, that means its windows are hidden. You can still choose the program from the menu, however, to display the program's windows.

You can also switch to another program by clicking in a window that belongs to an open program, by double-clicking a program icon, or by double-clicking the icon of a document that was created with the program.

Hiding and showing windows on the desktop

You can hide all windows except those of the active program by opening the Application menu and choosing Hide Others.

The other programs remain open even though their windows are hidden. When you switch to another program, its windows become visible again.

If you want to see all the open windows, open the Application menu and choose Show All.

Increasing memory available to run applications

A computer function called virtual memory allows you to open several applications and windows at the same time by creating extra random-access memory (RAM) on your computer's hard disk. Virtual memory, however, can also result in slightly slower performance. See the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu, for more information. Also see the document titled “About Virtual Memory” in the Documents folder on your desktop.

IMPORTANT Your computer comes with virtual memory turned off. You shouldn't use virtual memory unless you need to keep several applications open at once, and you should turn it off when you no longer need it. (Virtual memory may keep some applications from running at their best speed.) You can turn virtual memory on or off by using the Memory control panel in the Control Panels folder in the Apple (🍏) menu.

Protecting the information on a disk

When you have a valuable paper document like a birth certificate, you probably make an extra copy of it for safekeeping. Similarly, you should make copies of the documents you create on your computer. The extra copy is called a *backup*, and the process of making the copy is called *backing up*.

Once you have a backup, you're protected from accidentally losing the information on your hard disk. In the unlikely event that something happens to your hard disk, you can easily get the information back.

Making backup copies of your documents

Follow these tips for making backup copies of the documents on your computer:

- *Regularly* make copies of the documents you create.
- You can back up files stored on your hard disk by copying them to floppy disks.
- You can back up an entire floppy disk by copying it to another floppy disk of the same capacity or larger, or by copying it to a hard disk.

- If a file is too large to fit onto a single floppy disk, you need to use a commercial backup program to copy the file onto multiple floppy disks.
- You can use a commercial backup program to copy new and changed files from a hard disk to another hard disk, to a tape drive, or to a series of floppy disks.
- If your computer is on a network, you may be able to back up files by copying them to a shared disk on the network.

A helpful tip: A good way to remember which documents you have stored where is to print a copy of the items you've stored in a folder. For instructions on printing the contents of a folder, see the "Printing" topic of Macintosh Guide, available in the Guide (🔍) menu.

Restoring the information on your hard disk

Your computer's hard disk comes with valuable information already stored on it, including system software and some application programs. If information on your hard disk becomes damaged or lost, you can restore it if you have a backup copy of the information. The *Macintosh Performa CD: Performa Software* contains copies of all the system software and application programs that came with your computer. See Chapter 7, "Reinstalling Your Computer's Software," for instructions on using the *Macintosh Performa CD: Performa Software* to reinstall software.

It is also helpful to keep a printed copy of the items in your System Folder. For instructions on printing the contents of a folder, see the "Printing" topic of Macintosh Guide, available in the Guide (🔍) menu.

Using application programs designed for the PowerPC microprocessor

Your Macintosh is compatible with most application programs intended for use with Macintosh computers, but certain programs are designed especially for computers that have the PowerPC microprocessor. (These programs are sometimes called “native” applications.) These programs take best advantage of your computer’s speed.

Special memory requirements

Some native applications may be slightly larger than other programs and may take up more memory. If you find that you are running out of memory when you use one of these programs, you can use space on your computer’s hard disk as additional memory, which is called virtual memory. For instructions on how to use virtual memory, see the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu.

You can also add more memory to your computer, as described in Appendix B, “Installing Additional Memory.”

Using older Macintosh programs

If you experience problems using an older Macintosh program, it may be incompatible with your Macintosh. You may be able to use your older program if you turn off Modern Memory Manager. To do this, pull down the Apple (🍏) menu, open the Control Panels submenu, and select the Memory control panel. Then turn off Modern Memory Manager.

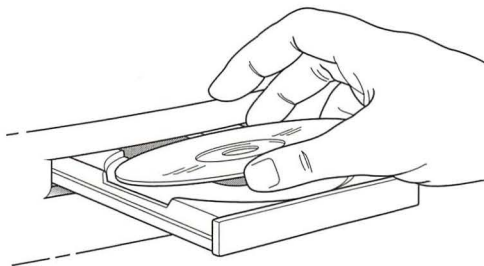
5

Using the Built-in CD-ROM Drive



This chapter provides information on the CD-ROM drive (also called a CD-ROM player). Refer to Appendix A, “Health, Safety, and Maintenance Tips,” for information on the proper handling of these discs.

With your internal CD-ROM (compact disc read-only memory) drive, you have access to large amounts of information. The CD-ROM drive can read the contents of CD-ROM discs, standard audio compact discs (CDs), and single-session or multisession Photo CDs. However, you cannot use the drive to save information on CD-ROM discs. ROM stands for *read-only memory*, meaning that the drive cannot “write” information onto CD-ROM discs.

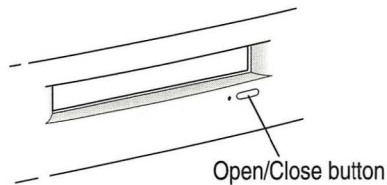


A wide selection of CD-ROM discs is available for entertainment, education, and business. A typical disc can hold over 650 megabytes (MB) of information—the equivalent of 270,000 pages of text, up to 8 hours of speech or music (depending on the sound quality), hundreds of high-resolution images, or any combination of text, sound, and graphics.

Inserting a CD-ROM disc

Follow these instructions to insert a CD-ROM disc into your CD-ROM drive. Then follow the instructions provided with your disc, as well as the instructions in this manual.

- 1 Start up your Macintosh computer, if it's not already on.**
- 2 Press the Open/Close button to open the tray of the CD-ROM drive.**

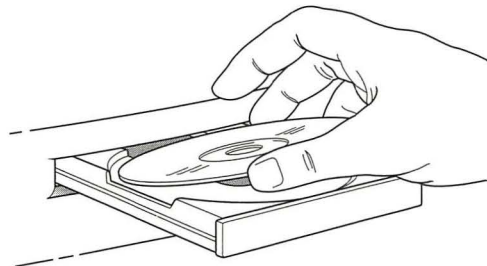


The tray opens.

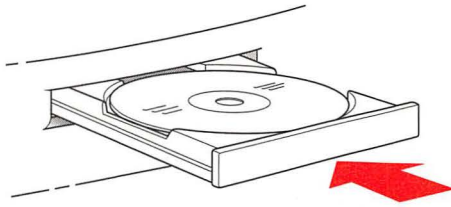
- 3 Place a CD-ROM disc in the tray, with the disc label facing up.**

Make sure the disc is lying flat and centered in the tray.

If you are using a small (8 cm) disc, make sure the disc is centered within the inside ring on the tray.



- 4 Push the tray in, or press the Open/Close button, to close the tray.



In a few moments, an icon for the CD-ROM disc appears on your screen.

Ejecting a CD-ROM disc

Follow these instructions to open the tray and eject a CD-ROM disc from your computer.

IMPORTANT You may not be able to eject a disc if it is being shared. To turn off file sharing, use the Sharing Setup control panel.

- 1 Open the tray.

There are several ways to open the tray of your CD-ROM drive.

If a CD-ROM disc icon appears on your screen:

- Select the disc icon on your screen and drag the icon to the Trash.
(Note: You won't lose information on the CD-ROM disc by dragging its icon to the Trash.)

IMPORTANT Don't select the disc icon and then choose Eject Disk from the Special menu. If you do this, the computer still remembers the CD-ROM disc in its memory and keeps asking you to reinsert it.

- Click the disc icon, then choose the Put Away command in the File menu.
- While the AppleCD Audio Player window is active, choose Eject CD from the File menu, or simultaneously press the ⌘ and E keys. (AppleCD Audio Player is a program that allows you to control your CD-ROM player and is available in the Apple [] menu.)

If no CD-ROM disc icon appears on your screen:

- Press the Open/Close button for your CD-ROM drive.

2 Take the CD-ROM disc out of the tray.

Store your disc in a safe place, away from heat, dust, and moisture.

3 Push the tray in, or press the Open/Close button, to close the tray.

To avoid possible damage to the tray and the CD-ROM drive, keep the tray closed when you are not using it.

Using the CD-ROM discs that came with your computer

Some of the CD-ROM discs that came with your computer—and some CD-ROM discs in general—require you to copy one or several items from the disc to your hard disk before you can view them. Other discs let you view the CD-ROM disc's contents directly from the CD-ROM disc itself. If you have a CD-ROM disc that requires you to copy some items to your hard disk, you'll get a message telling you so when you try to open a program on the CD-ROM disc.

IMPORTANT Never copy an entire CD-ROM disc to your hard disk. (Don't drag the CD-ROM disc's icon to your hard disk.) Copying the CD-ROM disc itself will take up too much memory on your hard disk. If you get a message telling you to copy or install items from the CD-ROM disc to your hard disk, double-click the CD icon to open it and copy those items—not the CD-ROM disc icon itself—to your hard disk. Look for any “read me” or “information” files on the CD-ROM disc for instructions.

Types of compact discs you can use

Not all CD-ROM discs store information in the same way. A disc stores and displays information according to a particular file format. Your computer's system software must understand the file format in order to use the contents of the disc.

Standard file formats

You can use CD-ROM discs with these standard file formats:

- HFS (Hierarchical File System)—the standard format used by the Macintosh.
- ISO 9660—the International Standards Organization’s file format for CD-ROM discs. This format has been adopted by many CD manufacturers to make their discs compatible with a variety of computers. It is also the format that allows you to use Photo CDs in your CD-ROM drive.
- The High Sierra format, a predecessor of the ISO 9660 format.
- Photo CDs.
- Audio CDs.

The software that lets you use discs with these file formats is already installed on your computer.

Other CD-ROM formats

Your CD-ROM drive also works with file formats other than the ones listed above (for example, CD-ROM XA) if you install the appropriate software on your Macintosh. To find out about the availability of Macintosh software for additional file formats, contact the publisher of a particular disc.

Audio CDs

Your CD-ROM drive can play audio CDs and audio tracks on CD-ROM discs using your computer’s built-in speaker. You can also attach headphones or speakers to your computer for stereo sound. For further information, see the “CD-ROM Discs” topic of Macintosh Guide, available in the Guide (⌘) menu.

Photo CDs

With your CD-ROM drive, you can use QuickTime to open digitized images stored on Photo CDs.

For more information on Photo CDs, see the “CD-ROM Discs” topic of Macintosh Guide, available in the Guide (⌘) menu.

Playing audio CDs

With your CD-ROM drive and your computer's built-in speaker, you can play audio compact discs (CDs) or audio tracks on CD-ROM discs. You can also attach headphones or speakers to the computer to listen to audio tracks. See Chapter 3 for information on connecting sound equipment to your computer.

To start, stop, and otherwise control audio discs, use the AppleCD Audio Player program, available in the Apple () menu. Your audio CD software will only play tracks that contain audio information. With the AppleCD Audio Player program, you can listen to an audio CD or audio tracks while doing other work on your computer. For more information about playing audio CDs, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide (📖) menu.

Working with Photo CDs

You can use your CD-ROM drive to open Photo CD images stored on Photo CDs. A Photo CD image is a digitized version of a standard photograph that you can open and view on your computer screen.



You can do many things with the images on your Photo CDs:

- Open and view the images individually on your computer screen.
- View the images on your computer screen in a series, as you would view a slide presentation.
- Copy and save the images, print them, paste them into word-processing documents or other documents that accept graphics, and edit them with a graphics application program.

Photo CD images are an excellent source of graphics for desktop publishing, multimedia presentations, business documents, and professional-quality graphic design. For more information on working with Photo CD images, see the “CD-ROM Discs” topic of Macintosh Guide, available in the Guide (⌘) menu.

Obtaining Photo CDs

Your own photographs can be recorded as Photo CD images on a Photo CD. To obtain a Photo CD of your own photographs, take your standard 35-mm film to a photofinisher who has a Photo CD system. The photofinisher develops your film, digitizes the photographs, and gives you back a Photo CD containing your images. A single Photo CD can hold approximately one hundred images.

If your Photo CD isn't full, you can take it back to the photofinisher and have more photos added until the disc is full. Such discs are called *multisession discs* because they contain images added after the first session. Your CD-ROM drive can read both single-session and multisession Photo CDs. (Other CD-ROM drives can read only single-session discs and are unable to read the additional images placed on a multisession disc.)

Before viewing the contents of a Photo CD

Normally, you open Photo CD images with the SimpleText program that came with your computer. If you wish, you can use a graphics or image-editing program instead of SimpleText. For instructions, see the “CD-ROM Discs” topic of Macintosh Guide, available in the Guide (🔍) menu. If you use SimpleText to view high-resolution images, you should increase the amount of memory that SimpleText uses. For more information on memory, see the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu.

A note about resolution

When a Photo CD image is created, it's recorded at five different levels of resolution. The higher the resolution, the more information is recorded about the image, and the sharper the image appears when displayed or printed at larger sizes. However, high-resolution images take up a lot of memory—up to 18 MB of data for one photograph—which affects file size, as well as the amount of time it takes to display or print an image.

It's best to work with a resolution appropriate for your monitor or printer. Some monitors and printers cannot display or print very high-resolution images.

For most work, a resolution of 768 x 512 pixels or smaller is suitable. For detailed work or very high-quality reproductions, you may want to use a higher resolution.

Make sure to open high-resolution images with application programs designed to handle large image files. SimpleText cannot open very large files.

Sharing a CD-ROM disc over a network

You can share a CD-ROM disc using the file-sharing feature of System 7.5. If the disc has audio portions, you will be able to hear the audio yourself, but other people on the network will not. Likewise, you cannot hear the audio portions of discs you access over a network.

For further information about file sharing in System 7.5, see the “Sharing Files” topic of Macintosh Guide, available in the Guide (🔍) menu.

Consult this chapter if you experience
problems using your computer.

6

Troubleshooting



When you have questions

If you want to know how to do a particular task with your computer, refer to Macintosh Guide in the Guide (🔍) menu. For instructions on using Macintosh Guide, see Chapter 2 of this manual.

If you have trouble

While you're using your computer, you may occasionally see a bomb icon or an error message, or the pointer (⏏) may “freeze” on the screen. If you have trouble with your computer, take a few minutes to read the information in this chapter. If your problem is related to a particular procedure, you should also look for information on that procedure in Macintosh Guide, available in the Guide (🔍) menu. For additional troubleshooting information and a list of common questions relating to your system software, see the “Troubleshooting” topic of Macintosh Guide.

If you are unable to access Macintosh Guide (for example, if your screen is “frozen”), refer to this chapter to see if you can resolve the problem.

WARNING If you have a problem with your computer and nothing presented in this chapter solves it, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the computer yourself, any damage you may cause to the computer will not be covered by the limited warranty on your computer. Contact an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Take your time

When you see an error message, you don't have to take action immediately. The message stays on the screen until you click the OK (or Restart) button or turn off the Macintosh.

To help diagnose and correct the problem, follow the suggestions in this subsection. Gather as much information on the situation as you can. Then follow the instructions in the next subsection, "Start Over by Restarting Your Computer."

- Make a note of exactly what you were doing when the problem occurred. Write down the message on the screen. List the programs you were using and the names of any items you know have been added to the System Folder since the system software was installed. This information will help a service person diagnose the problem. (It is helpful to keep a printed copy of the items in your System Folder. For instructions on printing the contents of a folder, see the "Printing" topic of Macintosh Guide, available in the Guide [?] menu.)
- Check the screen for any clues. Is a menu selected? What programs and document icons are open? Note anything else that seems relevant.
- If you were typing text and were not able to save it before the problem occurred, you can write down the parts of the text still visible on the screen so that some of your work will be easy to replace.
- Ask other Macintosh users about the problem you're having; they may have a solution for it.

If you need repair service, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

If you know the problem is with a program not published by Apple, call the program's publisher. Click the Phone Numbers button in the Service/Support area of the Launcher to get a software publisher's phone number.

Start over by restarting your computer

Often you can eliminate a problem simply by clearing the computer's memory and starting over.

If you can, save any open documents before restarting your Macintosh. If your system is frozen and does not respond to anything you do, or if you have a “bomb” message on the screen, saving may not be possible. You can try pressing ⌘-Option-Esc to quit the program in use when the problem occurred; if this works, you can then save the documents open in other programs before restarting. Restart the computer immediately after you save your documents—quitting a program using ⌘-Option-Esc may leave corrupted data in the computer's memory. This corrupted data is erased when you restart the computer.


Note: Use this key combination to force a program to quit only when you can't choose Quit from the File menu.

To restart your Macintosh, try the following steps:

- 1 If you can, choose **Restart** from the **Special** menu or from the dialog box that's on screen.

Dialog boxes contain messages from the computer. If something goes wrong, a message may appear on the screen asking you to restart the computer.

- 2 If you can't choose **Restart**, press the **Power** key (marked with a ) on the keyboard.

- 3 If the **Power** key on the keyboard doesn't work, hold down the **⌘** and **Control** keys while you press the **Power** key ()

This key combination restarts the computer. (Use this key combination only when you can't choose **Restart** from the **Special** menu or restart the computer using the **Power** key.)

- 4 If your computer still doesn't restart, to turn it off press the power button (⏻) on the back of the computer, wait at least 10 seconds, and turn it on again.

If you suspect that the problem is with other equipment, such as a printer or an external hard disk that's attached to your computer, turn that equipment off for 10 seconds or longer, then turn it on again and restart the Macintosh.

Rebuild your desktop

A process known as “rebuilding the desktop” helps your Macintosh keep track of data on your startup disks. (Although the hard disk in your computer is usually the startup disk, you can start up from any other disk that has system software installed.) It's a good idea to rebuild your desktop once a month or so.

Rebuilding your desktop can solve a number of problems. For example, when application documents are no longer represented by application-specific icons (and are instead represented by generic icons on the desktop), rebuilding the desktop fixes the problem. Afterward, appropriate icons should appear for all documents.

Some extensions may interfere with rebuilding your desktop. To prevent problems, you'll need to turn off all extensions except Macintosh Easy Open before you rebuild your desktop. When you finish rebuilding the desktop, turn the extensions you normally use back on.

To rebuild the desktop of a startup disk, follow these steps:

- 1 Open the Extensions Manager control panel by choosing Extensions Manager from the Control Panels submenu of the Apple () menu.
- 2 From the Sets pop-up menu, choose Save Set.
- 3 In the Save Set dialog box, type a name for your currently selected extensions (for example, “My Extensions”) and click OK. The name of your set is added to the Sets pop-up menu.

This saves your current set of extensions.

4 Choose All Off from the Sets pop-up menu to turn off all extensions.

5 Turn on Macintosh Easy Open by clicking it in the list so that a checkmark appears beside it.

You can find Macintosh Easy Open by scrolling down the list of extensions. Macintosh Easy Open appears under the heading “Control Panels.”

6 Restart your computer while holding down the Command (⌘) and Option keys.

Hold down the ⌘ and Option keys until you see the dialog box that asks if you’re sure you want to rebuild your desktop file. When the dialog box appears, you can release the keys.

7 Click OK.

The desktop is rebuilt.

IMPORTANT Do not stop the desktop-rebuilding process. Doing so could damage your system files.

8 Open the Extensions Manager control panel by choosing Control Panels from the Apple () menu. When the Control Panels window appears, double-click the Extensions Manager icon.

9 From the Sets pop-up menu, choose the name you gave your set of extensions in step 3.

This turns your original set of extensions back on.

10 Restart your computer to activate the extensions.

Solutions to common problems with your computer

This section contains descriptions of problems you could experience with your computer. Some problems may be caused by your CD-ROM drive, so if you don't find your problem included here, be sure to check the section "Solutions to CD-ROM Problems" later in this chapter.

The computer is turned on but the screen is dark.

One of the following is probably the cause:

- You have a screen saver program that darkens the screen when the computer has not been used for a certain period of time.
Press a key or move the mouse to turn off the screen saver.
- Your computer has gone to sleep due to inactivity. "Wake it up" by pressing the power key (marked with a triangle) on the keyboard.
- The monitor's brightness control (☼) is not adjusted properly.

Check the monitor's brightness control and turn it up if necessary.

- The Macintosh or the monitor is not getting power.

Check that the computer's power cord is firmly connected to the computer and plugged into a grounded electrical outlet, and that the outlet has power. Check that the monitor is plugged in and turned on, and that the monitor cable is firmly connected to both the computer and the monitor.

If you are displaying video from your computer on a television screen, it is normal for your computer monitor to be dark.

The computer's clock keeps time inaccurately.

Your computer has a clock that runs continuously. When the computer is turned off, a battery keeps the clock running. If your clock begins to keep time inaccurately, have your Apple-authorized service provider replace the battery.

WARNING Do not attempt to replace the clock battery yourself. If the clock begins to lose accuracy, see your Apple-authorized dealer or service provider for a battery replacement.

You inadvertently delete a program from your computer's hard disk.

- You can replace any of the software that came with your computer by dragging it from the *Macintosh Performa CD: Performa Software* to your hard disk. See the section “Copying Files From the CD-ROM Disc to Your Hard Disk” in Chapter 7.

When you start up, a disk icon with a blinking question mark appears in the middle of the screen.



This icon indicates that your Macintosh cannot find the system software it needs to start up. One of the following is probably the cause:

- Your computer may be having a problem recognizing external SCSI (Small Computer System Interface) equipment, such as hard disks, CD-ROM drives, and scanners that you may have connected to your computer.

Shut down your computer, turn off all external SCSI equipment, and disconnect the first SCSI device in the chain from your computer's SCSI port. Then restart the computer. If the computer starts up after you disconnect your SCSI equipment, refer both to the manuals that came with the equipment and Chapter 3 of this manual, which has information on the proper way to connect SCSI equipment and assign SCSI ID numbers.

If you have a printer connected to your computer's SCSI port, make sure your printer is connected properly. Most printers connect to the printer port, not the SCSI port. Check the manuals that came with your printer for information on how to connect it properly.

- System software is not installed on the startup hard disk, the system software is damaged, or the hard disk is not working properly.

Start up your computer using the *Macintosh Performa CD: Performa Software*. Do this by inserting the CD-ROM disc into the CD-ROM drive and holding down the C key while you restart the computer. (See the section “Starting Up From the *Macintosh Performa CD: Performa Software*” later in this chapter if you need more help.) Then follow the instructions in “Repairing a Damaged Disk” later in this chapter to test your startup hard disk and repair any damage.

If repairing the disk doesn't help, follow the instructions in Chapter 7, "Reinstalling Your Computer's Software," to reinstall system software on your startup hard disk.

A disk icon with an X appears in the middle of the screen and a floppy disk is ejected from the disk drive.



This icon indicates that the floppy disk you tried to start up from is not a startup disk. (When you turn on your computer, it looks first in the floppy disk drive for a disk containing system software. If the disk in the drive does not contain system software, the computer ejects the disk and looks on its internal hard disk for system software.)

Wait a few seconds. The computer should start up from its internal hard disk. Make sure you insert floppy disks only after the computer has begun starting up.

A "sad Macintosh" icon appears and the computer won't start up.



This icon indicates that your Macintosh cannot start up because of a problem with the system software or the computer hardware.

Eject any floppy disks by turning off the computer and then holding down the mouse button while you turn the computer on again. Try starting up with the *Macintosh Performa CD: Performa Software*. Do this by inserting the CD-ROM disc into the CD-ROM drive and holding down the C key while you restart the computer. (See the section "Starting Up From the *Macintosh Performa CD: Performa Software*" later in this chapter if you need more help.) If the "sad Macintosh" icon appears again, consult the service and support information that came with your computer for information on contacting an Apple-authorized service provider or Apple for assistance.

The hard disk icon does not appear on the desktop.

If you don't see a hard disk icon on the desktop, try the following:

- Use the Drive Setup program to make the disk available. Drive Setup is on the *Macintosh Performa CD: Performa Software* that came with your computer. For instructions on using Drive Setup, follow the instructions in “Checking For Damage On Your Hard Disk” in the section “Repairing a Damaged Disk” later in this chapter.
 - If the hard disk is internal, shut down your computer, wait at least 10 seconds, and then turn it on again.
 - If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
 - Check the ID numbers of all SCSI equipment (anything connected to the SCSI port [🔌]) connected to your computer. Each SCSI device must have its own unique ID number. If your computer came with the optional CD-ROM drive installed, it has SCSI ID number 3. See the manuals that came with your SCSI equipment, in conjunction with Chapter 3 in this manual, for information on setting SCSI ID numbers.
 - If the hard disk is your startup disk, start your computer with the *Macintosh Performa CD: Performa Software*. Do this by inserting the CD-ROM disc into the CD-ROM drive and holding down the C key while you restart the computer. (See the section “Starting Up From the *Macintosh Performa CD: Performa Software*” later in this chapter if you need more help.) Then follow the instructions in “Repairing a Damaged Disk” later in this chapter to test your startup hard disk and repair any damage.
- If repairing the disk doesn't help, follow the instructions in Chapter 7, “Reinstalling Your Computer's Software,” to reinstall system software on your startup hard disk.

Icons do not appear correctly on your screen.

You need to rebuild the desktop—a process that helps your Macintosh keep track of files and folders on your hard disk. For instructions, see “Rebuild Your Desktop” in the section “If You Have Trouble” earlier in this chapter.

If icons do not appear correctly after you rebuild the desktop, try rebuilding a second time.

Your Macintosh can't read a floppy disk.

If you see a message that a floppy disk is unreadable, try one of the following:

- If the disk has never been used, you may simply need to initialize it—that is, prepare it for use. For instructions, see the “Disks” topic of Macintosh Guide, available in the Guide (🔍) menu.
- The disk may be damaged. See “Repairing a Damaged Disk” later in this chapter for information on testing and repairing disks.
- The disk may have been formatted for use on another kind of computer. You may be able to use a program that lets you work with such disks on your Macintosh.

If you are trying unsuccessfully to use a DOS floppy disk, consider the following:

- When formatting floppy disks on a DOS computer for use in a Macintosh, you need to format standard double-sided disks as 720K disks and high-density disks as 1440K disks. Double-sided disks formatted in 1440K format and high-density disks formatted in 720K format may not work in a Macintosh.

If you think your DOS floppy disk might have a format that doesn't work in a Macintosh, use a DOS computer to copy the contents of the disk onto a properly formatted disk.

- Make sure the PC Exchange control panel is in the Control Panels folder (in the Apple [🍏] menu) and that it is enabled. To enable PC Exchange, open the Extensions Manager control panel and click the PC Exchange item (under the Control Panels heading) to make a checkmark appear. Then restart your computer.

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

- Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the software installation instructions in this manual.

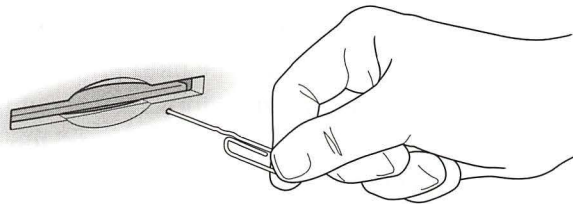
To return to the Macintosh desktop, choose Shut Down from the Special menu. When your computer is off, restart the computer, then press the Open/Close button of your CD-ROM drive to open the tray. Remove the CD-ROM disc. Close the tray. Then start up your computer again.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc in the drive before you shut down your computer.

You can't eject a floppy disk.

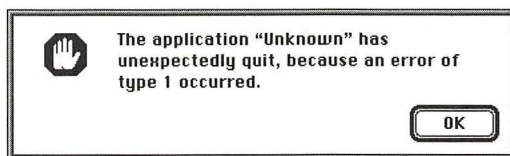
If you can't eject a floppy disk in the usual way, by selecting the disk's icon and choosing Eject Disk from the Special menu or by dragging the disk's icon to the trash, try the following in order:

- Hold down the ⌘ and Shift keys and press the number 1 key on your keyboard to eject a disk in the internal disk drive.
- Turn off the computer. If the disk isn't ejected, then hold down the button on your mouse or other pointing device while you turn the computer on again.
- Locate the small hole near the disk drive's opening, and carefully insert the end of a large straightened paper clip into it. Push gently until the disk is ejected. Do not use excessive force.



If none of these solutions works, take the computer or disk drive to your Apple-authorized service provider to have the disk removed.

You can't start an application program or it quits unexpectedly. Or, when you try to open a program, you see a message that not enough memory is available.



One of the following is probably the cause:

- The Macintosh ran out of memory.

Quit the programs that you have open and then open the program you want to use, or restart your Macintosh.

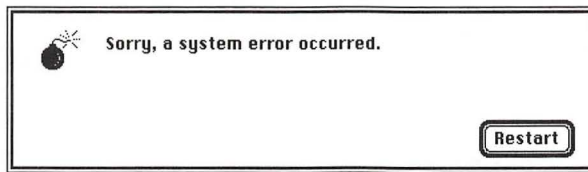
Use the Memory control panel to turn on virtual memory. For more information on virtual memory, see the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu.
- The program needs more memory.

Use the program’s Info window to give it more memory. For more information on increasing a program’s memory, see the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu.
- Sometimes incompatible system extensions or control panels can cause software problems. Restart while holding down the Shift key to temporarily turn off all system extensions.

If your program works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [🍏] menu) to turn on individual extensions and control panels. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the “Customizing Your Computer” topic of Macintosh Guide, available in the Guide (🔍) menu.

If your program performs better when a particular extension or control panel is turned off, contact the software’s manufacturer for information or an upgrade.

A dialog box with a bomb appears.



There is a software problem.

- Write down what you were doing when the message appeared, and write down the text of the message.
- Restart your Macintosh. (See “Start Over by Restarting Your Computer” in the section “If You Have Trouble” earlier in this chapter.) Most software problems are temporary, and restarting usually corrects the problem.
- If the problem recurs, check the startup disk and application program you were using when the dialog box appeared. Make sure that all programs, desk accessories, and system extensions you’re using are compatible with the system software (as described in the next paragraph). Reinstalling the system software may correct the problem. See Chapter 7, “Reinstalling Your Computer’s Software.”
- Sometimes incompatible system extensions or control panels can cause system software problems. Restart while holding down the Shift key; this temporarily turns off all system extensions. If your computer works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [🍏] menu) to turn on extensions and control panels one at a time. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the “Customizing Your Computer” topic of Macintosh Guide, available in the Guide (🔍) menu.

If your computer performs better when a particular extension or control panel is turned off, contact the software’s manufacturer for information or an upgrade.

- If the problem recurs, you may need to reinstall system software. See Chapter 7, “Reinstalling Your Computer’s Software,” for instructions.
- If the bomb only occurs in one application program, try reinstalling the program from the original disks. If reinstalling doesn’t solve the problem, contact the manufacturer of the program.

The pointer (⬅) doesn’t move when you move the mouse.

One of the following situations is probably the cause.

- There is a software problem. Try the following:
Press ⌘-Option-Esc to quit the application program in use when the problem occurred. If this works, you can save the documents open in other programs before restarting.
Restart your Macintosh. See “Start Over by Restarting Your Computer” in the section “If You Have Trouble” earlier in this chapter for instructions.
- Follow the suggestions in the previous entry, “A Dialog Box With a Bomb Appears.”
- The mouse or keyboard is not connected properly.
Turn off the computer by pressing the power key (and then press return to choose Shut Down), or if that doesn’t work, press the standby power button (⏻) at the back of the computer. With the computer off, check that the mouse and keyboard cables are connected properly. Then restart the computer.

IMPORTANT Do not connect or disconnect the mouse while the computer is turned on. You may damage your computer.

- Signals from the mouse are not reaching the computer, either because the mouse needs cleaning or because there is something wrong with it.
Clean the mouse according to the instructions in Appendix A of this book.
If you have another mouse or pointing device, try connecting and using it. (Turn the computer off before connecting it.) If the new device works, there is probably something wrong with the mouse you replaced.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Typing on the keyboard produces nothing on the screen.

One of the following is probably the cause:

- You haven't selected any text or set the insertion point (I).

Make sure the program you want to type in is the active program. Then place the pointer (⏏) in the active window and click to set an insertion point (I) or drag to select text (if you want to replace the text with your typing).

- If the computer beeps every time you press a key, Easy Access is probably turned on. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍏) menu. Click the checkmark next to Easy Access to remove the checkmark and to turn off Easy Access. Then restart your computer.

- The keyboard is not connected properly.

Turn off the computer by pressing the standby power button (⏏) at the back of the computer. With the computer off, check that the keyboard cable is connected properly at both ends.

- Some system software features are turned on that affect the way the keyboard works.

Open Easy Access from the control panels listed under the Apple (🍏) menu and turn off Sticky Keys, Slow Keys, and Mouse Keys.

- There is a software problem.

Restart your Macintosh. For instructions, see “Start Over by Restarting Your Computer” in the section “If You Have Trouble” earlier in this chapter.

Check the startup disk and application program you were using when the problem occurred. To check that the programs and the system extensions you're using are compatible with the system software, restart while holding down the Shift key; this temporarily turns off all system extensions. If your computer works normally after you do this, use the Extensions Manager control panel to turn on extensions and control panels one at a time. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels that may be causing the problem. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the “Customizing Your Computer” topic of Macintosh Guide, available in the Guide (📖) menu.

If the problem recurs, you may need to reinstall system software. See Chapter 7, “Reinstalling Your Computer’s Software,” for instructions.

- The keyboard is damaged.

If you have access to another keyboard, try using it instead. (Turn the computer off before connecting it.) If the new keyboard works, there is probably something wrong with the one you replaced.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

You can’t open a document, or you see a message that an application program can’t be found.

- Some documents can be opened by more than one application program. Try starting a program that you think might be able to open the document, then choose Open from the program’s File menu to try to open the document.
- Purchase and install the correct software to use the document, or find out if the creator of the document can convert it to a form that one of your programs can use.
- Don’t try to open the files in your System Folder. Most of the files in your System Folder are used by your computer for internal purposes and are not intended to be opened.
- Rebuild your desktop. Follow the instructions in “Rebuild Your Desktop” in the section “If You Have Trouble” earlier in this chapter.
- If the document is from a DOS computer, use the PC Exchange control panel (in the Control Panels folder in the Apple [🍏] menu) to specify which Macintosh program will open the document. For information about working with DOS documents on your Macintosh, see the information about DOS in Macintosh Guide, available in the Guide (📖) menu.

Your computer won’t restart, and a CD-ROM disc is in the CD-ROM drive.

- Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Close the tray, then restart your computer.

You experience problems using a document from a DOS computer.

If you can't open a DOS document using a Macintosh program, try the following:

- Open the document from within the program by choosing Open in the program's File menu.
- Use the PC Exchange control panel (in the Control Panels folder in the Apple [🍏] menu) to specify which Macintosh program will open the document.

If a DOS document is displayed incorrectly, or you see strange codes or characters in the document, try one of the following:

- Your application program may have special procedures for opening and saving documents with different file formats. See the information that came with your program, or call the program's publisher.
- Try opening the document in another program.

Note: Some characters that can be displayed on the Macintosh are not accurately displayed on DOS computers.

For more information about working with DOS documents on your Macintosh, see the information about using DOS in Macintosh Guide, available in the Guide (🔍) menu.

You see a message that your application program can't be opened because a file can't be found.

Macintosh programs designed specifically for the PowerPC microprocessor (also called "native" applications) use special files called *shared libraries*. Any necessary shared libraries should be installed automatically when you install these special Macintosh programs.

Follow the directions that came with your program to reinstall the program. If the shared library is still missing, contact the software program's manufacturer for assistance.

You experience problems using an older Macintosh program.

Some older Macintosh programs are not completely compatible with Macintosh computers that have the PowerPC microprocessor.

- Open the Memory control panel (in the Control Panels folder in the Apple [🍏] menu) and turn off Modern Memory Manager.
- If that doesn't work, contact the program's publisher to see if an upgrade is available.

You plug headphones into your monitor, but still hear sound coming out of your computer.

- Plug your headphones into the headphone jack (🎧) on the front of the computer.
- If you want to keep the headphones connected to the monitor, manually turn down the subwoofer. Turn the knob in the subwoofer balance control port (📶) counterclockwise to turn off the subwoofer volume. Remember to turn it back up the next time you want to hear the subwoofer.

You're listening through headphones, but the sound is odd.

You may have **SRS** (🔊) 3D Surround Sound turned on. To turn it off, open the Monitors & Sound control panel, which can be found in the Apple (🍏) menu, and click the Sound icon. Then click the checkbox to remove the checkmark next to "Enabled." 3D Surround Sound doesn't work well through headphones.

The subwoofer balance control (📶) on the back of your computer is not affecting the volume.

The subwoofer balance control affects the subwoofer volume only when the computer has external speakers attached or the monitor has built-in speakers. Otherwise, the subwoofer balance control (📶) has no effect on your computer's overall volume. Adjust your computer's volume with the sound controls on the front of the computer or monitor, with the volume control sliders in the Monitors & Sound control panel (in the Apple [🍏] menu), or with the volume controls in AppleCD Audio Player (if you're listening to an audio CD).

You can't record sound using an external microphone or the microphone built in to your monitor.

- Any time you want to record sound, you need to make sure your sound input source is set to “External Microphone.” Open the Monitors & Sound control panel in the Apple () menu, click the Sound icon, and choose “External Microphone” from the Sound Input pop-up menu.
- If you're using your monitor's built-in microphone to record, use the Monitors & Sound control panel to make the monitor's speakers mute. In the same control panel, make sure that the sound input is set to the monitor's built-in microphone.

For additional help, see the “Sound” topic of Macintosh Guide, available in the Guide (⌘) menu in the upper-right corner of your screen.

You can't quit (get out of) one of the programs you opened in the Launcher.

Some programs in the Learning section of the Launcher (when you press the Learning category button) are self-running demos. If you can't get out of one of the programs or demos, try the following:

- Look again to see if you can find a quit button or other quitting option.
- Hold down the ⌘ key on your keyboard, and then, while keeping this key held down, press the period key.
- While holding down the ⌘ key on your keyboard, press the letter Q.
- Press the Power key (marked with a ⏻) on your keyboard to shut down.
- Restart your computer by holding down the ⌘ and Control keys while you press the Power key (marked with a triangle).

Your screen displays a right-angle-bracket prompt (>).

If you inadvertently press the ⌘ and Power keys at the same time, you may get a right-angle-bracket prompt on your screen. To return to the desktop, type the letter G and press Return.

Solutions to CD-ROM problems

Problems using the CD-ROM drive

The CD-ROM drive icon does not appear on the screen.

- If you have SCSI devices (anything connected to the SCSI port [🔌]) attached to your computer, make sure that each device has a unique SCSI ID number (your CD-ROM drive has SCSI ID 3). Refer to the documentation that came with your SCSI devices if you need to reset SCSI ID numbers.
- If you reinstalled the CD-ROM software, make sure to restart your computer afterward.
- Make sure that the Apple CD-ROM extension is turned on in the Extensions Manager control panel. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍏) menu. Click to put a checkmark next to “Apple CD-ROM.” Then restart your computer.
- If you installed a CD-ROM drive after you bought your computer, make sure the CD-ROM software that came with the drive is installed. See the manual that came with the CD-ROM drive for software installation instructions. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.)

You’ve just ejected a CD, but the computer keeps asking you to reinsert it.

- The right way to eject a CD-ROM disc is either to select the CD-ROM disc and choose Put Away from the File menu or to drag the CD-ROM disc’s icon to the trash. If you select the CD-ROM disc and choose Eject Disk from the Special menu, the computer remembers the CD-ROM disc in its memory and keeps asking you to reinsert the disc. Reinsert the CD-ROM disc, then drag its icon to the trash. (You won’t lose information on the CD-ROM disc by dragging its icon to the trash.)

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

- Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the software installation instructions in this manual.

To return to the Macintosh desktop, choose Shut Down from the Special menu. After your computer has shut down, restart it. Then press the Open/Close button of your CD-ROM drive to open the tray. Remove the CD-ROM disc, close the tray, and start up your computer again.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc in the drive before you shut down your computer.

The tray of your CD-ROM drive won't open.

If a CD-ROM disc icon appears on your screen:

- Drag the disc icon to the Trash, or select it and choose Put Away from the File menu. (Note: You won't lose information on the CD-ROM disc by dragging its icon to the Trash. *Don't* select the disc icon and then choose Eject Disk from the Special menu.)

If the AppleCD Audio Player is active, choose Eject CD from the File menu.

If you see a message that a disc can't be put away because it is being shared, turn off file sharing, then try again to put away the disc.

If no CD-ROM disc icon appears on your screen:

- Press the Open/Close button of your CD-ROM drive.
- The signal to open the tray may not be reaching the computer. Turn off your computer, then do the following: Locate the small pinhole to the lower right of the CD-ROM tray opening, insert the end of a large straightened paper clip firmly and horizontally into the pinhole, push gently until the tray is released, then carefully pull the tray open. Do not force the tray open; wait until the paper clip has dislodged it or you may break the front of the tray.

WARNING Turn off your computer before you attempt to eject the tray using a paper clip. If you don't, you may damage the CD-ROM drive.

If neither of these suggestions works, your CD-ROM drive may be damaged. Contact an Apple-authorized service provider or Apple for further assistance.

Your computer won't restart, and a CD-ROM disc is in the CD-ROM drive.

- Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Close the tray, then restart your computer.

Problems using CD-ROM discs

You insert a CD-ROM disc, but its icon doesn't appear on the Macintosh desktop.

- Make sure that the disc label is facing up and the disc is centered in the tray. If you are using a small (8 cm) disc, make sure your computer is as level as possible and the disc is centered within the inside ring on the tray.
- Make sure the tray is closed all the way.
- Try restarting your computer.
- Try starting your computer from the *Macintosh Performa CD: Performa Software* while holding down the C key. (See the section "Starting Up From the *Macintosh Performa CD: Performa Software*" later in this chapter). If only the hard disk icon appears on the desktop, then there may be a hardware problem with your CD-ROM drive. If the CD-ROM disc icon appears above the hard disk icon, reinstall your CD-ROM software. The easiest way to do this is by reinstalling your system software, following the instructions in Chapter 7, "Reinstalling Your Computer's Software."

CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives. You can reinstall it by reinstalling your system software, following the instructions in Chapter 7, "Reinstalling Your Computer's Software."

- Make sure that the Apple CD-ROM extension is turned on in the Extensions Manager control panel. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍏) menu. Click to put a checkmark next to "Apple CD-ROM," then restart your computer.
- If you installed the CD-ROM drive after you bought your computer, make sure the CD-ROM software is installed. Refer to the documentation that came with the CD-ROM drive. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.)

Your computer displays the message “This is not a Macintosh disk: Do you want to initialize it?” when you insert a CD-ROM disc in the CD-ROM drive.

- Make sure that the Foreign File Access and Audio CD Access CD-ROM extensions are installed and turned on. You can find them in your Extensions folder in the System Folder on your hard disk. If they are not turned on, use the Extensions Manager control panel in the Control Panels folder in the Apple (🍏) menu to turn them on. (Click to put checkmarks beside them.) Then restart your computer.
- Make sure the CD-ROM software is installed. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.) If you installed a CD-ROM drive after buying your computer, see the manual that came with the drive.
- The disc may use a format that the Macintosh cannot recognize. Ask the disc's manufacturer for a disc that a Macintosh can recognize.

Your computer ejects a CD-ROM disc without giving you any error message.

- Make sure the disc is flat in the tray and the disc label is facing up.

IMPORTANT If you're using a small (8 cm) disc, make sure it's centered within the tray's inner ring and the computer is absolutely level. An improperly seated small disc in your computer may result in damage to the disc, the CD-ROM drive, or both.

- The disc may need to be cleaned. (See “Handling CD-ROM Discs” in the section “Handling Your Computer Equipment” in Appendix A.) If there are visible scratches on the shiny side of the disc, you may be able to remove them with a CD-ROM disc polishing kit (available from your audio CD dealer). If the scratches can't be removed, you need to replace the disc.
- The disc may be damaged. Try another disc in the drive, and try the original disc in another drive. If the original drive reads other discs or if the original disc also doesn't work in another drive, the disc is probably damaged. You need to replace it.

You can't open a document on a CD-ROM disc.

- Try opening the application program first; then open the document.
- Read the manual that came with your CD-ROM disc. Some discs come with software that you need to install on your computer before using the disc.

You can't save changes you make to information on a CD-ROM disc.

- A CD-ROM disc is a read-only medium. This means that information can be read (retrieved) from it, but not written (stored) on it. You can save the changed information on a hard disk or floppy disk.

Problems using ISO 9660 or High Sierra discs

You cannot access files on a CD-ROM disc that uses the ISO 9660 or High Sierra format.

- Discs in the ISO 9660 and High Sierra disc formats have version numbers attached to file names. Some application programs need these version numbers in order to work with files. To make the version numbers available to programs on your computer, follow these instructions.

Drag the CD-ROM disc icon to the Trash. When the tray opens, hold down the Option key and push the tray back in. Continue to hold down the Option key until the disc is in the drive. The program you are using should now be able to locate file names on that CD-ROM disc.

- Make sure that Foreign File Access, ISO 9660 File Access, and High Sierra File Access are present in the Extensions folder in your System Folder on your hard disk.

Problems playing audio CDs

You don't hear any sound when you play an audio CD or an audio track on a CD-ROM disc using the AppleCD Audio Player.

- If you have headphones or speakers connected to the computer, adjust the connectors to make sure they are firmly connected. Make sure the volume control on your headphones or speakers is not turned down too low.
- If you do not have headphones or speakers connected to the computer, make sure that nothing else is plugged into the sound output port (⏮) on the back of your computer.
- If you are using a CD-ROM disc over a network, you won't be able to hear the audio portion.
- Make sure the volume is turned up in the AppleCD Audio Player. With the Audio Player open, drag the volume control slider up, use the volume controls on your computer, or press the Up Arrow key on your keyboard.

- The CD may have been paused. Click the Play/Pause button in the AppleCD Audio Player once or twice.
- If your CD-ROM drive was installed after you bought your computer, make sure the audio cable is properly connected. See the documentation that came with the CD-ROM drive.

While playing an audio track on a CD-ROM disc that combines audio tracks and data, you double-click the disc icon and the audio track stops playing.

- You can't open data files on a CD-ROM disc and listen to audio tracks on that disc at the same time.

You are unable to record sound from an audio CD.

- Check your computer's sound input port to see if a microphone or other device is connected.
- You may need to reset the sound options in the Monitors & Sound control panel. Refer to the "Sound" topic of Macintosh Guide, available in the Guide (🔍) menu.

Problems using Photo CDs

You insert a Photo CD disc, but its icon doesn't appear on the desktop.

- Reinstall the CD-ROM and QuickTime software. The easiest way to do this is by reinstalling your system software, following the instructions in Chapter 7, "Reinstalling Your Computer's Software."

Your computer does not display color icons for individual images on a Photo CD.

- Your computer may be low on memory. To view color icons, restart your computer and then reopen the Photos folder. See the "Memory" topic of Macintosh Guide, available in the Guide (🔍) menu, for more information on managing memory.

After you open an image file on a Photo CD, the image is scrambled, colors are displayed incorrectly, or no image appears in the window.

- The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. (See the "Memory" topic of Macintosh Guide, available in the Guide [🔍] menu, for more information on managing memory.)

After you open an image on a Photo CD, your system is “frozen” and does not respond to any input, or you have a “bomb” message on your screen.

- Restart your Macintosh. (If you need help restarting your computer, see “Start Over by Restarting Your Computer” in the section “If You Have Trouble” at the beginning of this chapter.) The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. See the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu, for more information on managing memory.

If your computer's performance decreases

If you notice a decrease in your computer's speed and general performance after you install special software (a control panel, system extension, or custom utility), it may be because the software is not compatible with Macintosh computers built with the PowerPC microprocessor.

- To find out if a system extension or control panel is the problem, hold down the Shift key while you restart the computer. This temporarily turns off control panels and extensions. If the computer performs better without these software items, one of them is likely to be the problem. (If you just added new software, its system extension, control panel, or custom utility is the most probable cause of the problem.)

To find out which software is the problem, use the Extensions Manager control panel (in the Control Panels folder in the Apple [🍏] menu) to turn off a system extension or set of extensions. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the “Customizing Your Computer” topic of Macintosh Guide, available in the Guide (🔍) menu. If the computer performs better when an extension is turned off, contact the extension's manufacturer for information or an upgrade.

- Use the Memory control panel to turn off virtual memory. For more information on virtual memory, see the “Memory” topic of Macintosh Guide, available in the Guide (🔍) menu.

If you still do not notice an improvement, you may want to reinstall system software on your startup hard disk. See Chapter 7, “Reinstalling Your Computer’s Software,” for instructions.

If you typically use several application programs at the same time, your computer’s performance will increase if you install more RAM (random-access memory). See Appendix B, “Installing Additional Memory.”

Solving printer problems

The following suggestions should work for all printers. (*Note:* Also refer to the manual that came with the printer.)

- Make sure that the printer driver for your printer is turned on in the Extensions Manager control panel (in the Control Panels folder in the Apple [🍏] menu). To find out the name of the printer driver—for example, *LaserWriter*—refer to the documentation that came with your printer. The printer driver should appear in the Extensions list and have a checkmark beside it. (Click to put a checkmark beside it, and then restart your computer.)
- Check your printer settings in the Chooser (in the Apple [🍏] menu), making sure you have selected the correct printer. If you are using a printer that is shared by other computer users (a printer on a local network), make sure that AppleTalk (in the lower-right corner of the Chooser) is active. If you are using your own printer (a serial printer connected to your computer), make sure that AppleTalk is inactive.
- Turn off the computer and printer and check the printer cable connections.
- If none of these suggestions solves the problem, you may need to reinstall the printer driver that came with your printer. Refer to the manual that came with your printer.

Note: If you have an Apple printer, you need to determine which printer driver to reinstall—the one that came with your printer or one of the drivers included on your *Macintosh Performa CD: Performa Software*. Depending on when you bought your printer, one of these printer drivers will be more recent than the other. It is the more recent one you want. Look at the date of the printer driver that came with your printer. (Usually, the printer driver comes on a floppy disk with the printer.) To see the date, insert the floppy disk, double-click its icon to open it, and choose “by Name” from the View menu. Then look for the same printer driver name on the *Macintosh Performa CD: Performa Software*. (Look for it in the Hard Disk Files folder, in the System Folder files folder, in the Extensions folder. Then choose “by Name” from the View menu to see the date next to it.) *The drivers must have the same name.* If they do, reinstall the printer driver with the most recent date next to it. If you use the printer driver on the *Macintosh Performa CD: Performa Software*, drag the printer driver into the System Folder on your hard disk and then click OK. If you use the printer driver that came with the printer, see the manuals that came with the printer for instructions on reinstalling it.

Starting up from the *Macintosh Performa CD: Performa Software*

To test, repair, or initialize a hard disk, or to install system software on a hard disk, you need to start up your computer from another disk. You can start up your computer using the *Macintosh Performa CD: Performa Software*, a compact disc (CD) that came with your computer.

The procedure for starting up from the CD-ROM disc varies depending on the condition of the system software on your hard disk. To find out which procedure to use, you must turn on your Macintosh.

The steps that follow tell how to start up from a CD-ROM disc, depending on what you see on your screen.

If you see a blinking question mark on your screen

The blinking question mark means that your Macintosh is unable to find usable system software on your hard disk.



- 1 Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.
- 2 Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.

Be sure to use the CD with the words “Performa Software” at the top. Make sure the disc is lying flat in the tray.

- 3 To close the tray, push the tray in or press the Open/Close button.

Your Macintosh recognizes the CD-ROM disc as a startup disk, and in a few seconds the Macintosh desktop with a Launcher appears.

If you see the Macintosh desktop

- 1 Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.
 - 2 Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.
- Be sure to use the CD with the words “Performa Software” at the top. Make sure the disc is lying flat in the tray.
- 3 To close the tray, push the tray in or press the Open/Close button.
 - 4 Hold down the C key on your keyboard while you choose Restart from the Special menu.

Continue to hold down the C key until you see the “Welcome to Macintosh” message.

Repairing a damaged disk

If you see a message reporting that a disk is damaged or unreadable, you may need to repair the disk.

Try these suggestions first

If you can't start up from a hard disk or you don't see the hard disk icon on the desktop, try the following:

- If the hard disk is internal, shut down your Macintosh, wait at least 10 seconds, and then turn it on again.
- If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- If the hard disk is your startup disk, start up with a different startup disk. (See the previous section, "Starting Up From the *Macintosh Performa CD: Performa Software*.")

If, after you start up from a different disk, your hard disk's icon appears on your desktop, reinstall system software on the hard disk. (See Chapter 7, "Reinstalling Your Computer's Software.")

- Check the ID numbers of all SCSI equipment (anything connected to the SCSI port [⌘]) on your computer. Each device must have a unique ID number. The computer itself (the main logic board inside it) has the ID number 7 and the internal CD-ROM drive has the ID number 3. The ID numbers 0, 1, 2, 4, 5, and 6 are available for additional SCSI devices.

Also check that the chain of devices is terminated properly. For information on setting SCSI ID numbers and terminating a SCSI chain, see both the manuals that came with your SCSI equipment and Chapter 3 of this manual.

- If none of these suggestions solves the problem, test the disk by following the instructions given in "Checking for Damage on Your Hard Disk," later in this section.

Checking for damage on your hard disk

You can test a hard disk for damage with the Drive Setup program, which is on the *Macintosh Performa CD: Performa Software*, a CD that came with your computer.

- 1 Start up your computer from the *Macintosh Performa CD: Performa Software*.

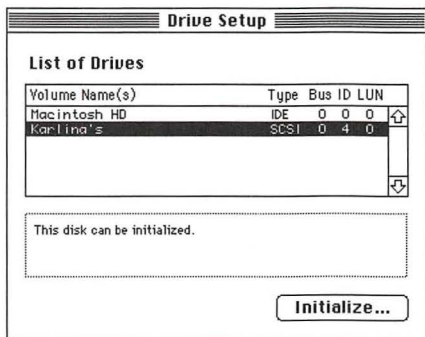
See “Starting Up From the *Macintosh Performa CD: Performa Software*” earlier in this section.

- 2 Click the Drive Setup icon in the Launcher to open the Drive Setup program.



Drive Setup

- 3 In the list of drives, click the disk you want to test.



- 4 From the Functions menu, choose Test Disk.
- 5 When a message tells you that the testing is complete, click Quit.

If the test reveals a problem, you may be able to correct it by using Disk First Aid or another disk repair program (see the instructions in the next section) or you may need to reinitialize the disk (see “Initializing a Hard Disk” later in this chapter). Consult an Apple-authorized service provider for assistance if necessary. If you had a hard disk from another manufacturer installed after you bought your computer, use the software that came with the disk or contact the disk vendor to get the latest version of software.

How to repair a hard disk or floppy disk

You can repair some types of disk damage by using the Disk First Aid program, which is on the *Macintosh Performa CD: Performa Software*, a CD that came with your computer.

- 1 Start up your computer from the *Macintosh Performa CD: Performa Software*.

See “Starting Up From the *Macintosh Performa CD: Performa Software*” earlier in this section.

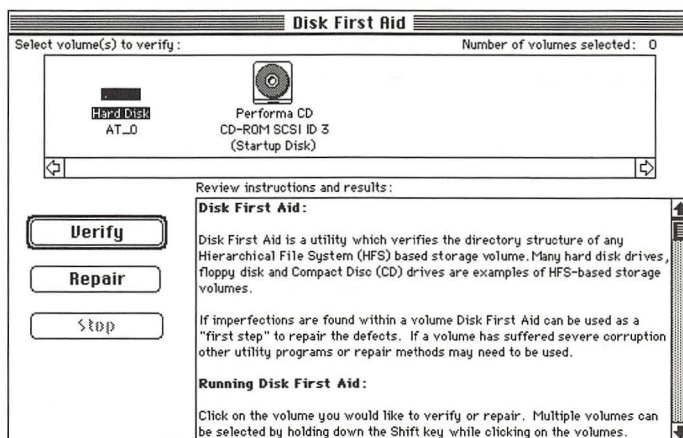
- 2 Click the Disk First Aid icon in the Launcher to open the Disk First Aid program.



Disk First Aid

- 3 Click the icon of the disk you want to test.

Disk icons appear in a box at the top of the Disk First Aid window.



4 Click Repair to begin testing and repairing the disk.

You can't repair the startup disk or the disk that contains the Disk First Aid program, but you can test these disks by clicking Verify. If the program reveals a problem with either of these disks, start up the computer from another disk so that you can repair the damaged disk.

If you want to test and repair another disk, click its icon and then click Repair.

5 When testing and repair are done, choose Quit from the File menu.

If Disk First Aid cannot correct the problem

- Try repairing the disk again. Sometimes repeating the process corrects the problem.
- Use another disk repair or recovery program. Some disk repair programs let you recover information from a damaged disk.
- Consult an Apple-authorized service provider for help.
- If you can't repair the disk, you'll need to reinitialize it, which erases all the information on it. Before you reinitialize, be sure you recover all the information you can and back it up. Then erase (reinitialize) the disk. For instructions on reinitializing a floppy disk (that is, preparing it for use), see the "Disks" topic of Macintosh Guide, available in the Guide (🔍) menu. For instructions on reinitializing a hard disk, see the next section, "Initializing a Hard Disk."

If initialization doesn't work, discard the damaged disk (if it's a floppy disk) or take it to your Apple-authorized service provider for repair (if it's a hard disk). Bring both of the *Macintosh Performa CDs*, which you received with your computer, with you to the service provider.

Initializing a hard disk

The hard disk inside your computer was initialized (formatted for use) at the factory, so you shouldn't need to initialize it. You need to initialize a hard disk only if one of the following is true:

- You purchase an uninitialized hard disk from another manufacturer.
- Your hard disk is damaged and can't be repaired.

If a hard disk needs to be initialized, its icon does not appear on the desktop when you start up the computer using another disk.

You initialize your internal hard disk using a program called Drive Setup, which is on the *Macintosh Performa CD: Performa Software*, a CD that came with your computer.

WARNING Initializing a disk erases any information that may be on it. Before you initialize a damaged disk, try to repair it as described in “Repairing a Damaged Disk” earlier in this chapter.

- 1** Start up your computer from the *Macintosh Performa CD: Performa Software*.

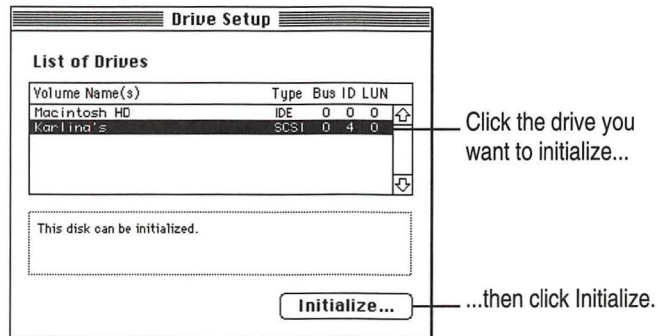
See “Starting Up From the *Macintosh Performa CD: Performa Software*” earlier in this section.

- 2** Click the Drive Setup icon in the Launcher to open the Drive Setup program.



Drive Setup

- 3** In the list of drives, click the disk you want to initialize.



- 4** Click Initialize to initialize the hard disk.

- 5** Click Quit when you see a message reporting that initialization was successful.

If a message reports that initialization failed, try again. If initialization fails a second time, take the disk to your Apple-authorized service provider for repair.

Consult this chapter if you have problems
with your computer that require you to
reinstall the computer's software.

7

Reinstalling Your Computer's Software

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System software is the set of programs and other files that your computer uses to start itself up, keep track of your files, and run the application programs you use. System software is kept in the System Folder. When you turn on your computer, it looks for a startup disk, which is a disk that contains the system software. The startup disk is usually the hard disk that's inside your computer, though another hard disk, a floppy disk, or a compact disc (CD) can also be a startup disk.

When should you reinstall system software?

Your Macintosh came with all the necessary system software installed on its internal hard disk, so you don't need to install system software on that disk unless you encounter software problems.

If you have a new hard disk or a newly initialized hard disk that doesn't contain system software, or if you want to upgrade to a more recent version of system software on a hard disk, you need to install system software. Follow the instructions in this chapter to reinstall system software.

If your hard disk already has system software installed on it but there is a problem with the disk or the software, you may see this icon in the middle of the screen:



If this icon appears, first try testing your startup hard disk and repairing any damage. To do this, follow the instructions in “Repairing a Damaged Disk” in Chapter 6. If repairing the disk doesn’t help, follow the instructions in the next section.

When to use the *Macintosh Performa CD: Performa Software*

You reinstall your computer’s software by using the *Macintosh Performa CD: Performa Software*, a compact disc that came with your computer. You need to use the *Macintosh Performa CD: Performa Software* to reinstall the software if

- your computer will not start
- a file or an application program is missing or damaged

This chapter describes three ways to use the *Macintosh Performa CD: Performa Software*:

- You can reinstall (restore) just the system software—the files needed to run your computer—using the Restore System Software program.
- You can reinstall (restore) all the software that came with your computer by using the Restore All Software program.
- You can copy one or more individual files from the CD-ROM disc to your hard disk.

Note: Also keep the *Macintosh Performa CD: Guided Tour* handy. This CD contains backup copies of the Guided Tour programs you may have seen when you first turned on your computer. Instructions later in this chapter also describe how to use the *Guided Tour* CD to restore these programs.

The “If You Still Have Problems” section toward the end of this chapter tells you what to do if the CD-ROM disc does not solve the problems with your computer.

Using the CD-ROM disc as your startup device

Before you reinstall software onto your hard disk, you need to start up your computer with the *Macintosh Performa CD: Performa Software*. The procedure for starting up from the CD-ROM disc varies depending on the condition of the system software on your hard disk. To find out which procedure to use, you must turn on your Macintosh.

If you see a blinking question mark on the screen

The blinking question mark means that your Macintosh is unable to find usable system software on your hard disk.

Note: If you don’t see a blinking question mark, go to the next section, “If You See the Macintosh Desktop.”

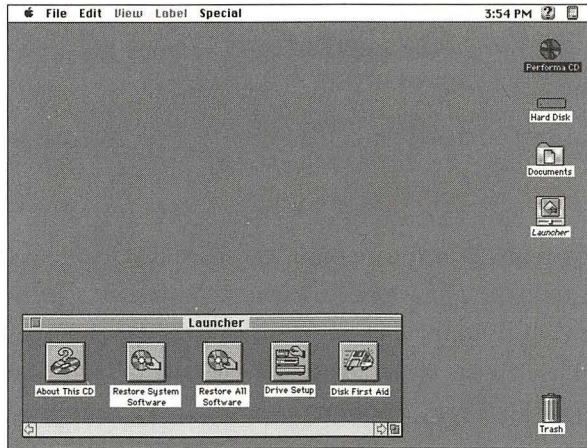


- 1 Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.
- 2 Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.

Be sure to use the CD with the words “Performa Software” at the top. Make sure the disc is lying flat in the tray.

- 3 To close the tray, push the tray in or press the Open/Close button.

Your Macintosh recognizes the CD-ROM disc as a startup disk, and in a few seconds the desktop below appears.



Your screen may look slightly different from this one.

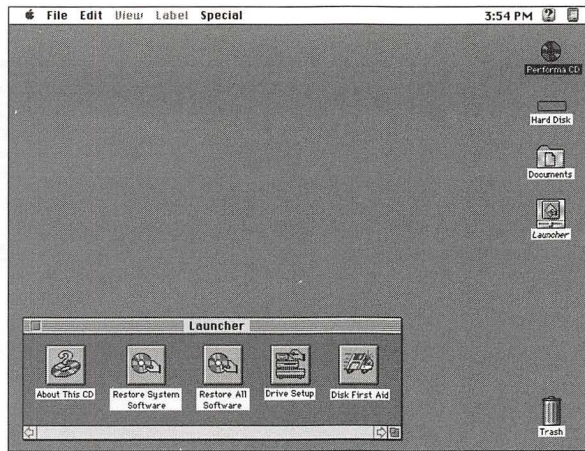
Now continue with the steps in “Reinstalling Your System Software” or “Reinstalling All Your Original Software.”

If you see the Macintosh desktop

- 1 Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.
- 2 Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.
- 3 To close the tray, push the tray in or press the Open/Close button.
- 4 Hold down the C key on your keyboard while you choose Restart from the Special menu.

Continue to hold down the C key until you see the “Welcome to Macintosh” message.

In a few seconds the Macintosh desktop with the Launcher appears.



Your screen may look slightly different from this one.

Now continue with the steps in “Reinstalling Your System Software” or “Reinstalling All Your Original Software.”

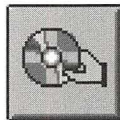
Reinstalling your system software

Software can sometimes develop problems and may need to be replaced. Restore System Software is a program that reinstalls the system software that was on your computer when you purchased it.

Note: When you use the Restore System Software program, only system software (all the Apple programs that run the computer) is reinstalled. All other programs and documents remain on your hard disk.

Before you begin, you must start up your computer using the *Macintosh Performa CD: Performa Software*. For instructions, see the previous section, “Using the CD-ROM Disc as Your Startup Device.”

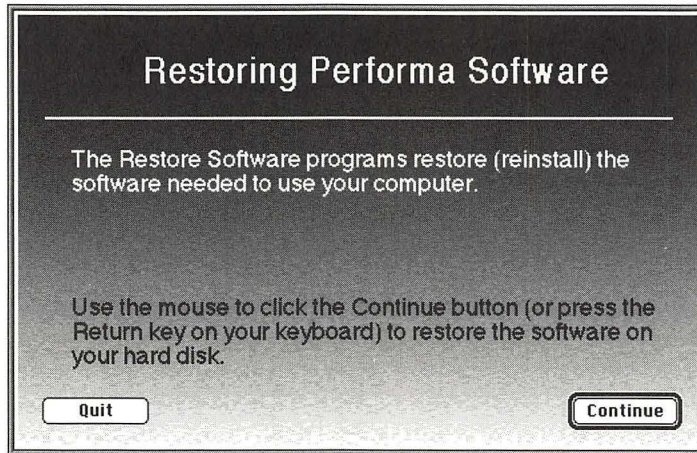
- 1 **Locate the Restore System Software icon in the Launcher window.**



Restore System
Software

- 2 Click the Restore System Software icon to open it.

In a moment you'll see this screen:

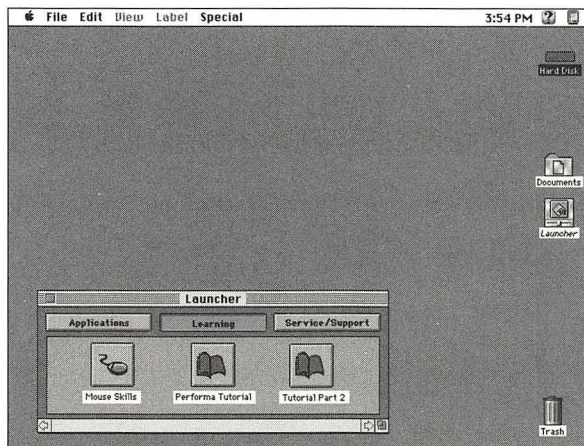


- 3 Click the Continue button, or press the Return key on your keyboard.

Restoring begins. A status box appears and keeps you informed of progress during the restoration, which takes several minutes.

- 4 When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.

In a few moments, the Macintosh desktop with the Launcher appears on your screen:



Your screen may look slightly different from this one.

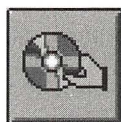
- 5 Insert the *Macintosh Performa CD: Guided Tour* that came with your computer into the CD-ROM drive.

The *Macintosh Performa CD: Guided Tour* reinstalls the software programs that you may have seen before when you first turned on your computer. (You should reinstall these in case you need to refer to them again.)

- 6 Hold down the C key on your keyboard while you choose Restart from the Special menu.

Continue to hold down the C key until you see the “Welcome to Macintosh” message.

- 7 In the Launcher that appears on your screen, click the Restore Guided Tour button.



Restore Guided
Tour

- 8 When the Restoring Performa Software screen appears, click the Continue button or press the Return key on your keyboard.

- 9 When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.

In a few moments, the Macintosh desktop with the Launcher appears on screen (just as in step 4). You have successfully restored Apple software to your hard disk.

If your computer starts up properly but a program is damaged or missing, you may want to run the Restore All Software program from the *Macintosh Performa CD: Performa Software*. See the instructions in the next section, “Reinstalling All Your Original Software.”

Reinstalling all your original software

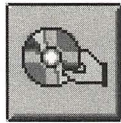
If you want to restore the Macintosh Performa system software and application programs to the state they were in when you first purchased your computer, follow these instructions.

Note: If you have installed newer versions of programs that came with your computer, you may need to reinstall the newer versions after you use the Restore All Software program. All documents and programs that *didn't* come with your computer (all the files that you have added to your hard disk, such as letters and reports) remain on your hard disk when you reinstall your other software using the Restore All Software program. Programs that you added to your computer after you bought it do not need to be reinstalled.

Before you begin, you must start up your computer using the *Macintosh Performa CD: Performa Software*. For instructions, see “Using the CD-ROM Disc as Your Startup Device,” earlier in this chapter.

To restore all the software that came with your computer:

- 1 Click the Restore All Software icon in the Launcher window.



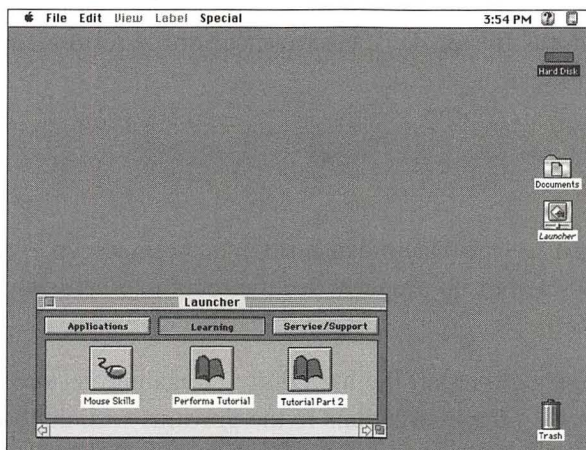
Restore All
Software

- 2 In the dialog box that appears, click the Continue button or press the Return key on your keyboard.

Restoring begins. A status box appears and keeps you informed of progress during the restoration, which takes several minutes.

- 3 When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.

In a few moments, the Macintosh desktop with the Launcher will appear on your screen.



Your screen may look slightly different from this one.

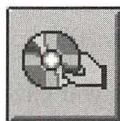
- 4 Insert the *Macintosh Performa CD: Guided Tour* that came with your computer into the CD-ROM drive.

The *Macintosh Performa CD: Guided Tour* reinstalls the software programs that you may have seen before when you first turned on your computer. (You should reinstall these in case you need to refer to them again.)

- 5 Hold down the C key on your keyboard while you choose Restart from the Special menu.

Continue to hold down the C key until you see the “Welcome to Macintosh” message.

- 6 In the Launcher that appears on your screen, click the Restore Guided Tour button.



Restore Guided
Tour

- 7 When the Restoring Performa Software screen appears, click the Continue button or press the Return key on your keyboard.
- 8 When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.

In a few moments, the Macintosh desktop with the Launcher appears on screen (just as in step 4). You have successfully restored all your original software to your hard disk.

If you still have problems

If you don't see the Macintosh desktop on your screen, or if the Macintosh still does not start up properly, see the section "Repairing a Damaged Disk" in Chapter 6.

If you are able to repair the hard disk, try again to restore the information on it by following the instructions in the previous section, "Reinstalling All Your Original Software."

If you are not able to repair the hard disk, call Apple for help. See the service support information that came with your computer.

Copying files from the *Performa Software* CD-ROM disc to your hard disk

The *Macintosh Performa CD: Performa Software* has a folder on it named Hard Disk Files. You can copy any file in this folder by dragging the file to your hard disk. The Hard Disk Files folder contains these folders:

- System Folder files (contains system software)
- Apple Extras files (contains copies of Apple software)
- Applications files (contains copies of software not published by Apple)
- Documents files (contains various documents)

For example, if your computer is working but you have inadvertently deleted the SimpleText application program from your hard disk, you can copy the SimpleText program from the *Macintosh Performa CD: Performa Software* without using the Restore All Software program. (SimpleText is in the Apple Extras folder on the *Performa Software* CD-ROM disc.)

Note: Your *Performa Software* CD-ROM disc may contain other programs, such as Drive Setup and Disk First Aid. These programs are used for testing and repairing disks, as described in the section “Repairing a Damaged Disk” in Chapter 6.

For information about programs on either of the *Macintosh Performa* CDs, see any Read Me files that may accompany them on the CD-ROM disc.

Protecting the information on your hard disk

If your hard disk becomes damaged, you can use both *Macintosh Performa* CDs to reinstall the software that came with your computer—but the documents that you have created could be lost if you don’t keep backup copies. Be sure to copy your documents frequently onto backup disks. See the section “Protecting the Information on a Disk” in Chapter 4.

Creating a startup floppy disk

The *Macintosh Performa CD: Performa Software* contains a program (in the Disk Images folder) that enables you to create a floppy disk that you can use to start up your computer. You may want to create a startup floppy disk to use in case you are unable at some time to start up from the CD-ROM disc.

See the text file in the Disk Images folder for instructions on using the program to make a startup floppy disk.

Read this chapter only if you want
to connect to a local area network,
to a TV, or to video equipment.

8

Connecting Equipment for Special Purposes

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This chapter contains information that is useful only if you want to connect your computer to networking equipment or to a TV or video equipment. (For information on connecting TV or video equipment, see the last section of this chapter and see Chapter 9, “Installing Expansion Cards.”)

Connecting to a network

This section contains information only for people whose computers are connected to other computers through a local area network. A local area network lets computers communicate with each other—for example, in businesses, it is what enables more than one computer to share a printer and access documents on a central, shared server.

Note: Using a modem is not the same as being connected to a local area network. If you have a modem and the appropriate software that makes use of it, you already have access to online services. If your computer came with a modem, see the appropriate manuals that came with your computer for more information about using online services.

About Macintosh networking

Your Macintosh can connect to a network that consists of as few as two computers or as many as thousands or even millions of computers and other devices. The network allows you and the other people connected to it to share information, access remote services, and share computing resources such as printers and modems.

A network extends the features of your Macintosh by extending your reach to the services and resources provided on a network. For example, your computer alone lets you store, retrieve, and modify information on floppy disks, hard disks, and CD-ROM discs. On a network, however, you can also store and retrieve information on the hard disks and CD-ROM discs of other computers, access information that other people have stored for you, and use electronic mail or other network services.

Your computer can be connected to several kinds of networks including the following:

- **LocalTalk** To connect to a LocalTalk network, you connect a LocalTalk cable to either the modem port or printer port on your computer. Through that cable, you can both print on a printer shared by other computers and access a central server.
- **Ethernet** To connect to an Ethernet network, you need to install an Ethernet card in the communication or PCI (peripheral component interconnect) slot in your computer.
- **Alternative networks such as TokenRing, ISDN, or FDDI** To connect to any of these networks, you need to install a PCI card in one of the PCI slots in your computer.

More detailed information about connecting to LocalTalk or Ethernet networks follows.

Connecting to a LocalTalk network

You can connect to a LocalTalk network through the printer port on your computer. To connect to a LocalTalk network, you need LocalTalk cables and a LocalTalk adapter. The Apple LocalTalk Connector Kit DIN-8, which enables you to connect to a LocalTalk network through your printer port, is available from Apple-authorized dealers.

After you connect to a LocalTalk network, you need to open the Network control panel in the Control Panels folder in the Apple () menu and make sure the LocalTalk icon is selected. Then, from the Apple () menu, choose Chooser and make sure AppleTalk is set to Active.

For further instructions on how to select a network connection and other information about using your Macintosh on a network, see the “Networks” topic of Macintosh Guide, available in the Guide (🔍) menu.

Connecting to an Ethernet network

To connect to a high-speed Ethernet network, you need to buy and install an Ethernet card. Some Ethernet cards use the communication slot in your computer; however, so do internal modem cards. If your computer came with an internal modem and you want to connect to an Ethernet network, buy and install an Ethernet card that uses one of the PCI (peripheral component interconnect) slots in your computer.

- If you buy an Ethernet card that uses a PCI slot, follow the instructions in “Installing a PCI Card” in Chapter 9 to install the card.
- If you buy an Ethernet card that uses the communication slot, follow the instructions in “Installing a Communication Card” in Chapter 9 to install the card.

If you buy and install an Ethernet card, you can connect your Macintosh to an existing high-speed Ethernet network by using cables compatible with the particular network: thin coaxial cables, 10BASE-T twisted pair cables, thick coaxial cables, or other standard cables.

Depending on the type of cables used in the Ethernet network you're connecting to and the type of card you purchased, you may need to purchase an Apple Ethernet media adapter or other compatible media adapter to connect your Macintosh to a network. (Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for more information on Apple Ethernet media adapters.)

To use Ethernet, you need to change the network connection in the Network control panel. For instructions on how to select a network connection and other information about using your Macintosh on a network, see the "Networks" topic of Macintosh Guide, available in the Guide (🔍) menu.

IMPORTANT Your Macintosh supports EtherTalk Phase 2 (AppleTalk Phase 2 Protocols for Ethernet networks) and TCP/IP (via the TCP/IP protocol) but not EtherTalk Phase 1 (AppleTalk Phase 1 protocols for Ethernet networks). To use TCP/IP, you must set up the MacTCP control panel. (See the "Networks" topic of Macintosh Guide, available in the Guide [🔍] menu, for instructions on how to make a TCP connection.) Non-Apple products that you can use to communicate over Ethernet using protocols are also available.

Note: The use of an Ethernet card will make your Macintosh a Class A computing device, according to FCC regulations.

Viewing TV and video on your computer

When you install the appropriate cards, you can connect a TV or other video input equipment (such as a VCR) to your computer to watch and record TV or video on your computer. (Some computers come with one or more of these cards already installed.) For more information about installing cards for viewing or editing video and other special capabilities, see Chapter 9.

Read this chapter for instructions
on installing expansion cards in
your computer.

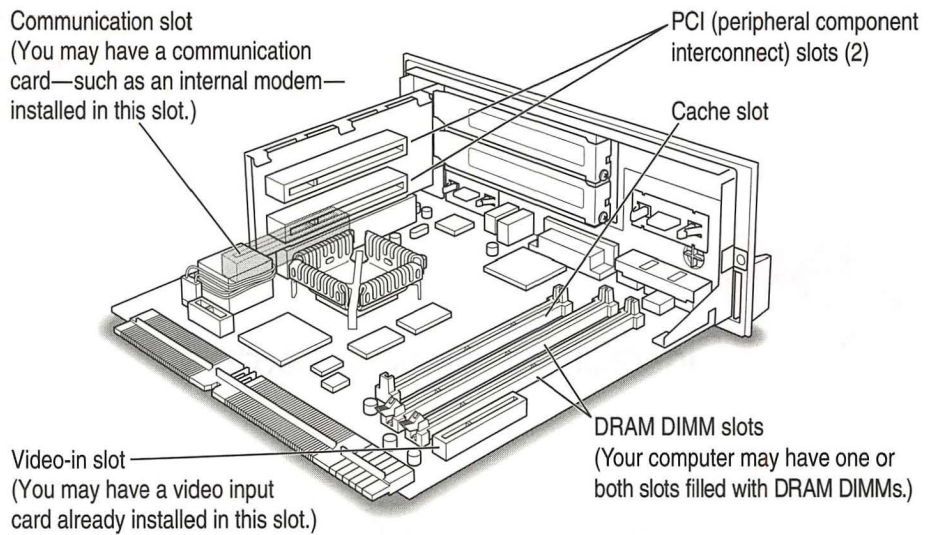
9

Installing Expansion Cards



Expansion cards are printed circuit boards that can be installed in your computer to give it special features, such as enhanced video capabilities, networking and communications capabilities, and additional processing power. Your Macintosh has slots available for three different kinds of expansion cards:

- two PCI (peripheral component interconnect) slots for 6.88-inch PCI cards (such as a video-editing card)
- a communication slot for an internal modem or Ethernet card (you may already have an internal modem installed in this slot)
- a video-in slot for a video input card that brings signals into the computer from a videocassette recorder (VCR), laser disc player, video camera, or similar device



You can also install the following additional expansion cards in your Macintosh:

- a TV tuner card that allows you to watch and to record TV and videos on your Macintosh
- a video input card that allows you to watch and to record videos (for example, from a VCR) on your Macintosh
- additional dynamic random-access memory (DRAM) in the form of Dual Inline Memory Modules (DIMMs) (See Appendix B for instructions on installing memory.)

Other video cards that let you perform video editing and other functions may also be available for your computer.

This chapter contains instructions for installing a PCI card or a communication card. To install a video input card or a TV tuner card (if you don't already have these cards installed), follow the instructions that came with the kit or card.

WARNING To avoid damaging your computer and expansion card, do not attempt to install any expansion card without first checking the documentation for that card. If the documentation specifies that an Apple-certified technician must install the card (usually because the installation requires special training or tools), consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to install the card yourself, any damage you may cause to your computer or card will not be covered by the limited warranty on your computer. If the card is not an Apple-labeled product, contact Apple directly to see if you can install the card yourself. See the service and support information that came with your computer for a telephone number to contact Apple.

Installing an expansion card involves three procedures:

- opening the computer
- inserting the PCI or communication card into a specific slot
- closing the computer

Opening the computer

IMPORTANT To avoid generating static electricity (from your body) that may damage components, do not walk around the room until you have completed the installation of the expansion card and closed the computer. Additionally, move the logic board as little as possible while it is outside the computer case.

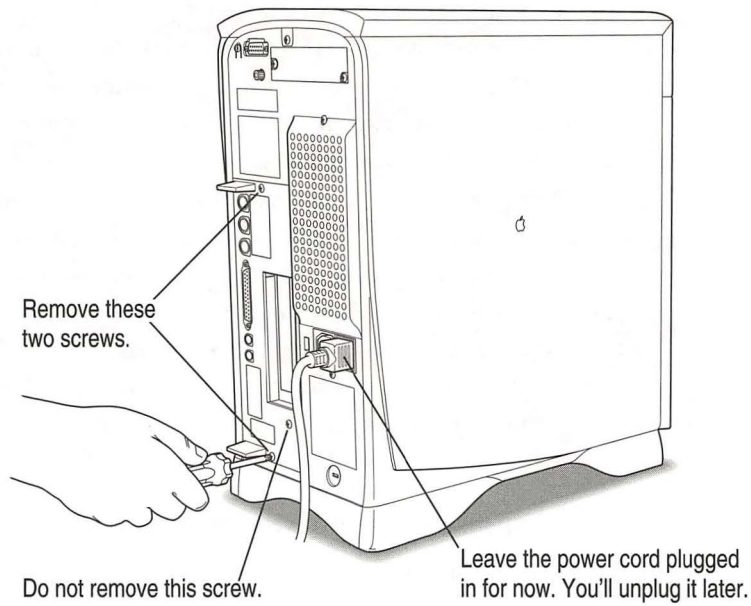
- 1 Shut down your computer by choosing Shut Down from the Special menu.**

You can also press the Power key (marked with a $\langle \rangle$) on the keyboard.

- 2 Unplug all the cables except the power cord from the computer (including the cable that connects your keyboard to the computer).**

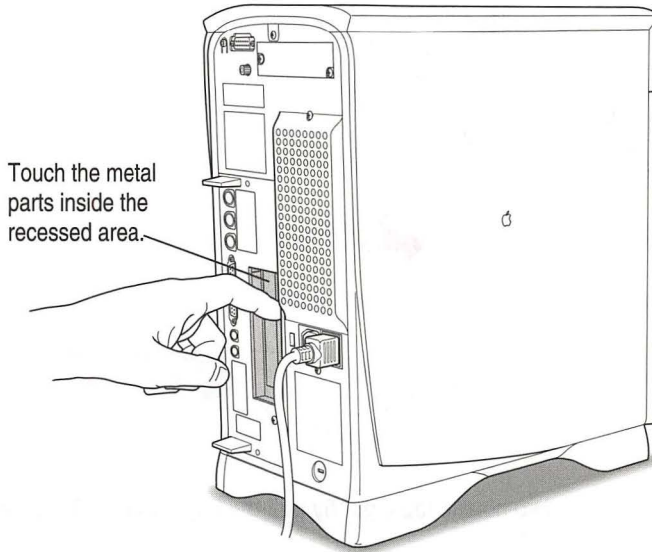
Leaving the power cord plugged in helps protect the computer from electrostatic discharge damage. (You'll unplug the power cord later.)

- 3** With a screwdriver, remove the two screws shown here from the computer's back panel.



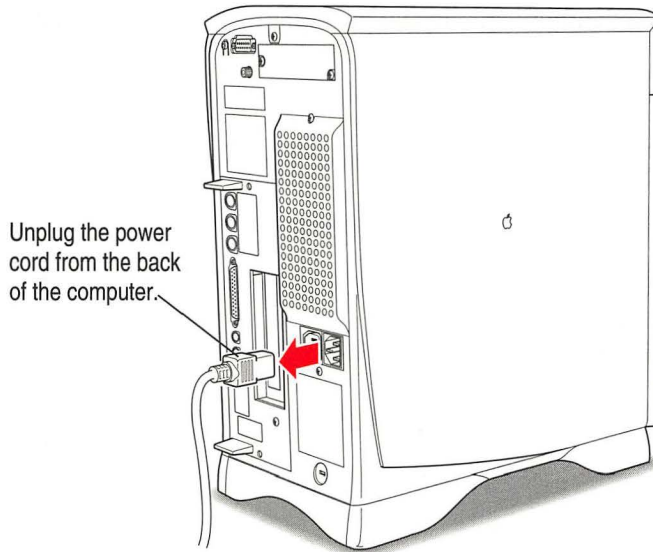
- 4 Touch the recessed metal parts in the back panel to discharge static electricity from your body.

Always do this before you touch any parts or install any components inside the computer. This discharges static electricity from your body and helps protect components inside the computer from being damaged by static electricity discharge.

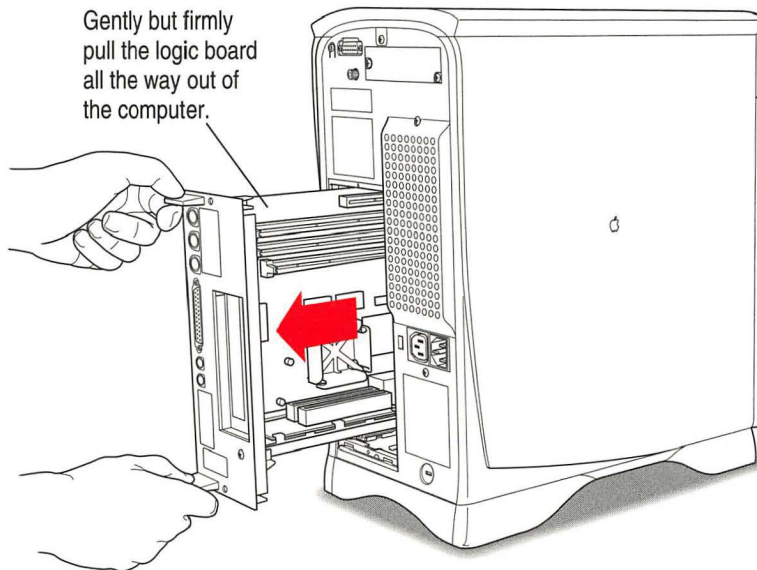


5 Unplug the power cord from your computer.

You can unplug the power cord now that you discharged static electricity in the previous step.

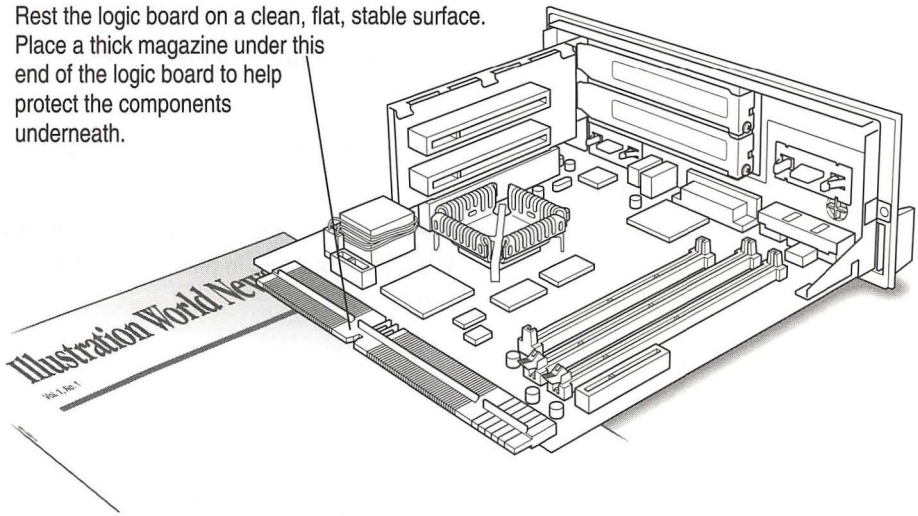


6 Grasping the two plastic tabs, gently pull the logic board all the way out of the computer.



- 7** Pull the logic board all the way out and set it on a clean, flat, stable surface. Rest the end of the board on a thick magazine or a thin book to protect the components underneath.

Rest the logic board on a clean, flat, stable surface. Place a thick magazine under this end of the logic board to help protect the components underneath.



What you do next depends on whether you're installing a PCI card in the PCI slot or installing a modem or Ethernet card in the communication slot. Skip to the section that pertains to the item you are installing.

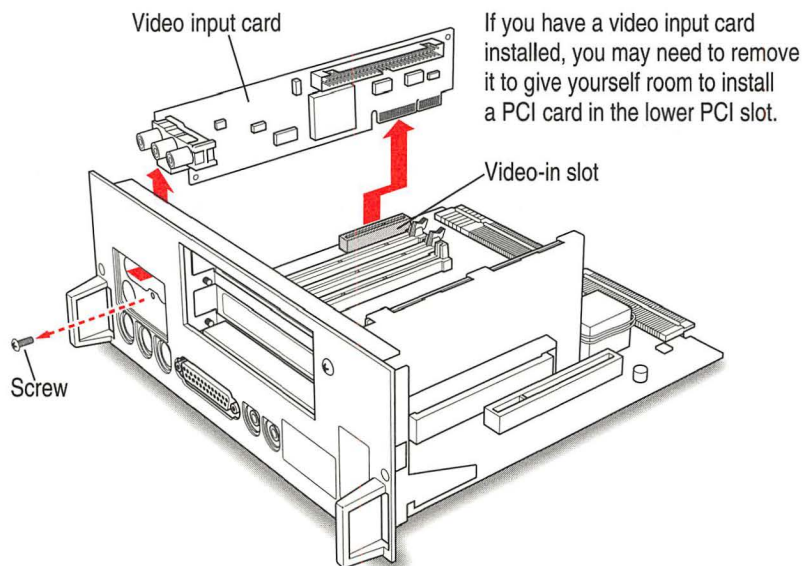
Installing a PCI card

This section contains instructions for installing a PCI card. PCI cards for your computer must be no longer than 6.88 inches long.

Use these instructions in conjunction with the instructions that come with your PCI card:

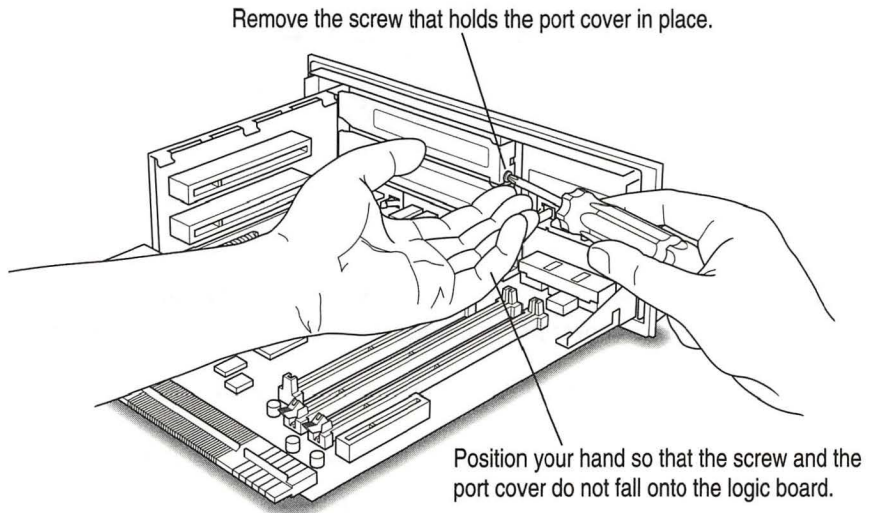
- 1 If you have a video input card already installed in your computer and you're going to install a PCI card in the lower PCI slot, remove the video input card temporarily to give yourself more room while you install the PCI card. Unscrew the screw on the front of the vertical plate that holds the video input card in place and remove the card as shown. (You'll reinstall the card later.)

Skip this step if there is not a video input card installed on your logic board or if you're installing the PCI card in the uppermost PCI slot.



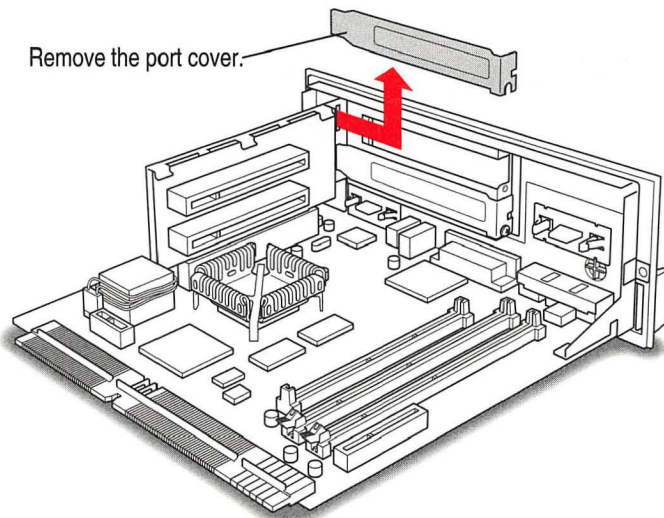
- 2 Remove the screw that holds the port cover in place. Hold your finger under the screw to catch it and the port cover when they come loose.**

Try not to let the port cover or the screw fall onto the logic board.



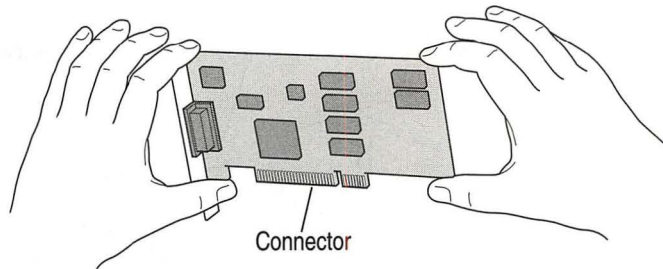
- 3 Remove the port cover and set it aside.**

You won't need the port cover for the rest of these instructions, but save it in case you ever remove the PCI card and need to cover the port again.



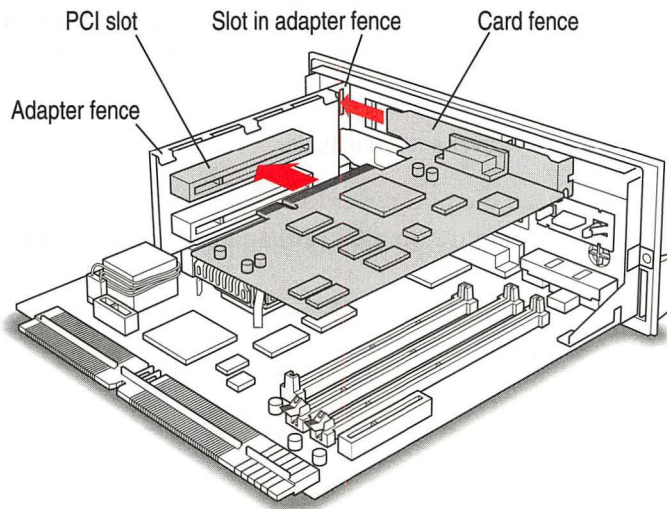
4 Remove the PCI card from its static-proof bag.

Hold the card by its edges to avoid touching any connectors on the card.



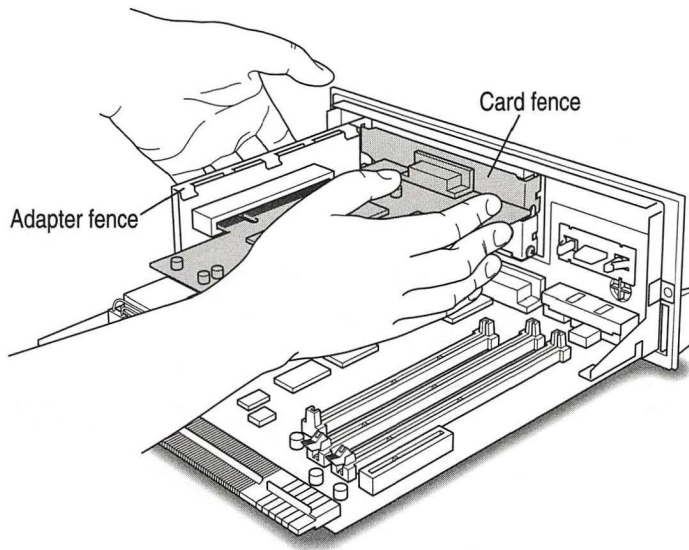
5 Insert the card into the PCI slot so that the card fence matches up to the opening where the port cover was and slides through the slot in the adapter fence.

Support the adapter fence with one hand.



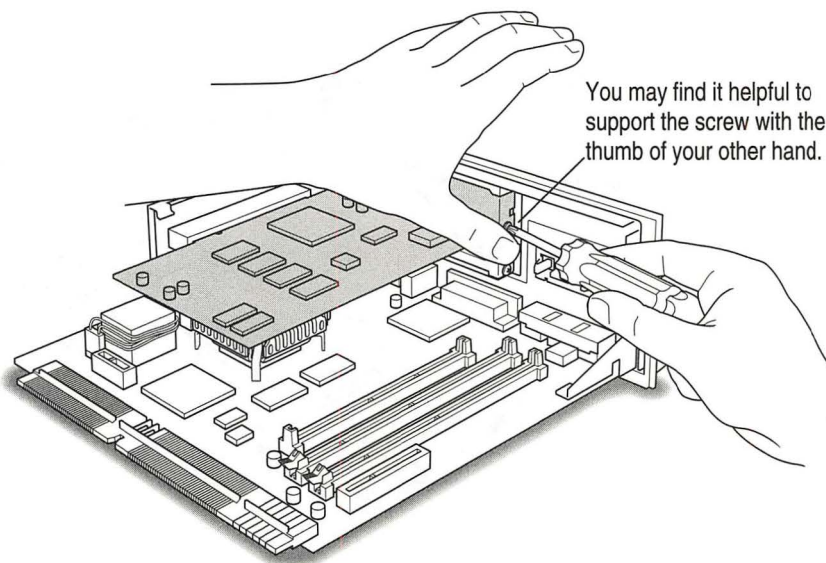
- 6** Supporting the adapter fence with one hand, push the card until it snaps into place.

Don't force the card. If you meet resistance, pull the card out and try again. To see if the card is properly connected, make sure the card's metal fence is flush with the side of the access cover.

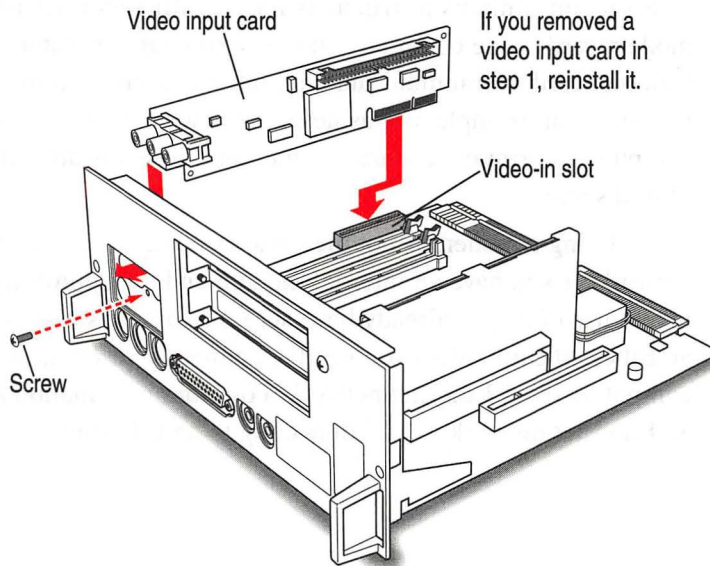


7 Reinsert the screw into the PCI card fence and screw it into place.

To help insert the screw, push the PCI card fence forward with your thumb so the screw holes align. Insert the screw until it's somewhat steady, hold your thumb underneath it (to prevent it from falling), and use the screwdriver to screw it into place.



- 8** If you removed a video input card from the logic board in step 1, reinsert it now.



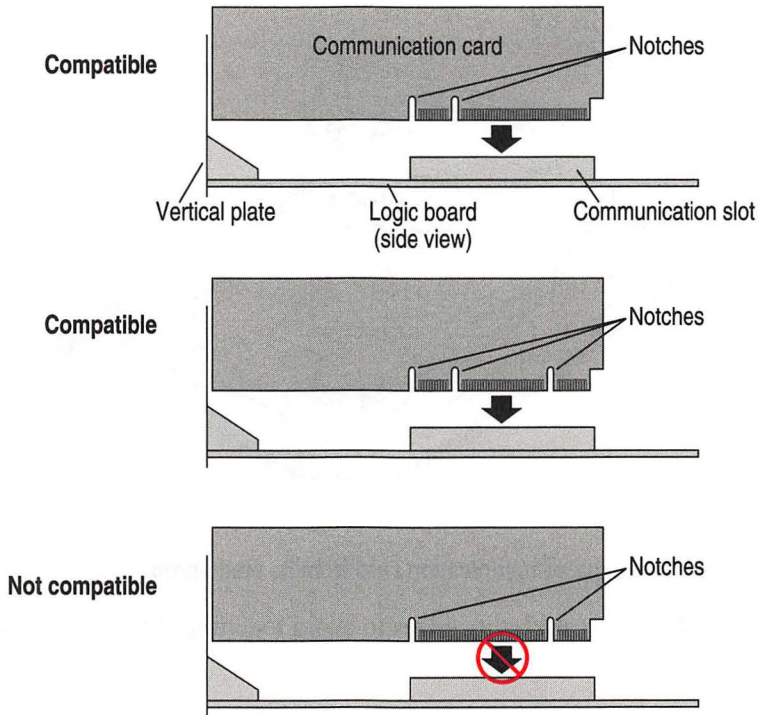
- 9** If you have a communication card to install, go to the next section. If you are finished installing items in your computer, proceed to "Closing the Computer," later in this chapter.

Installing a communication card

This section contains instructions for installing an Ethernet or internal modem card in the communication slot in your computer. You use an Ethernet card to communicate with other computers through a local area network. For example, in businesses, it is what enables more than one computer to print on a shared printer and to access documents on a central, shared server.

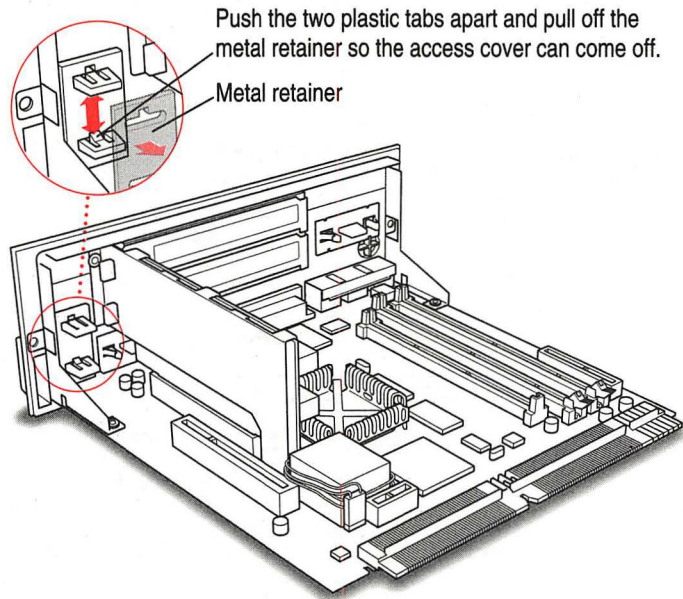
Note: Using a modem is not the same as being connected to a local area network. If you have an internal modem and the appropriate software that makes use of it, you already have access to online services. You do not need an Ethernet card unless you need to connect your computer to other computers in an Ethernet network. For more information about connecting to an Ethernet network, see “Connecting to an Ethernet Network” in Chapter 8.

Some communication cards designed for other communication slots are not compatible with your computer and cannot be installed in its communication slot. You can tell by examining the placement of the notches on the card. Use the following illustration as a guide if you're not sure you have the correct type of card for the slot.



To install a communication card, follow these steps:

- 1 **Remove the plastic access cover from the vertical plate.**



- 2 **Remove the communication card from its static-proof bag.**

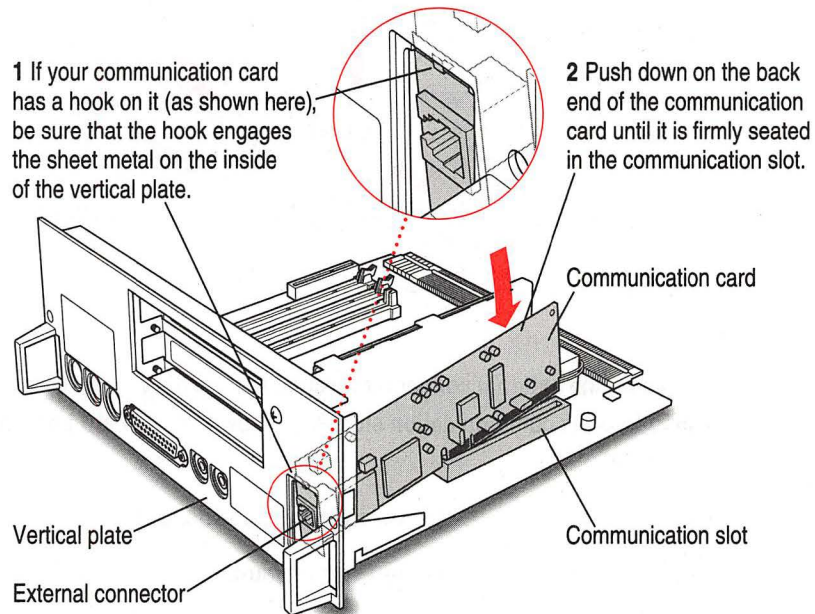
Hold the card by its edges to avoid touching the connectors on the card.

3 Align the card over the communication slot.

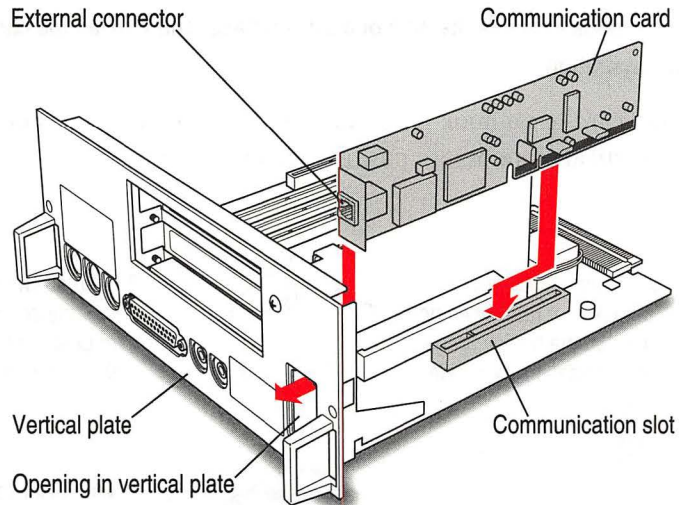
The communication slot is the rightmost slot on the logic board as you face the vertical plate.

4 Check the external connector on your card and see which of the following two illustrations matches the kind of card you have. Then install the card according to the illustration.

If the card has a hook on it, make sure the hook catches between the layers of the vertical plate before pushing the card into the slot.



If the card does not have a hook on it, simply pass the external connector through the opening in the vertical plate as shown here. (Some cards have an external connector that protrudes out of the opening; others, like here, have a flatter external connector.)



- 5** Passing the external connector through the opening in the vertical plate, insert the card into the communication slot. Press down on the card until the connector is solidly in place.

Don't force the card. If you meet resistance, pull the card out and try again.

If your card has a hook on it, make sure the hook catches between the layers of the vertical plate.

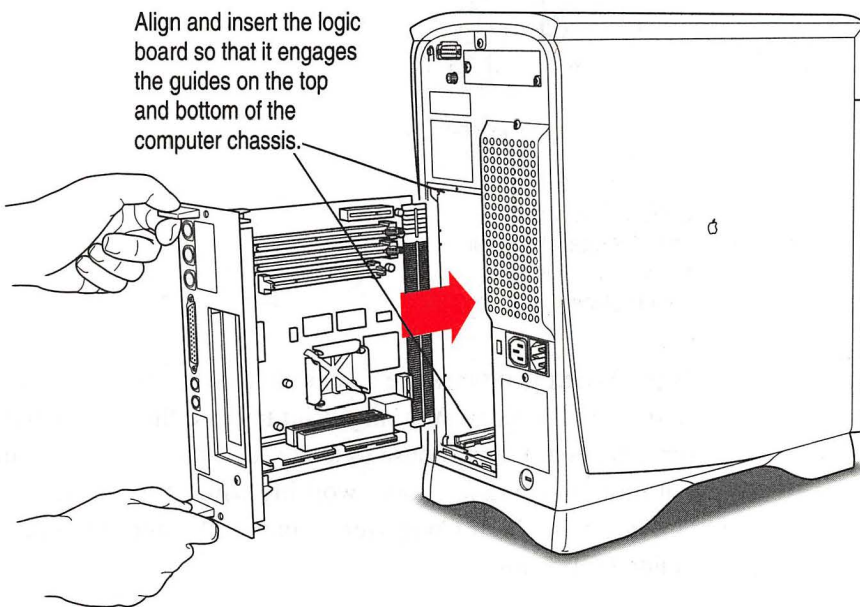
- 6** To see if the card is properly connected, lift it gently. If it resists and stays in place, it's connected.
- 7** If the communication card you installed is an Ethernet card, see if you need to install software with it. Install it if you need to.

- 8 If you installed an Ethernet card, change the network connection in the Network control panel.

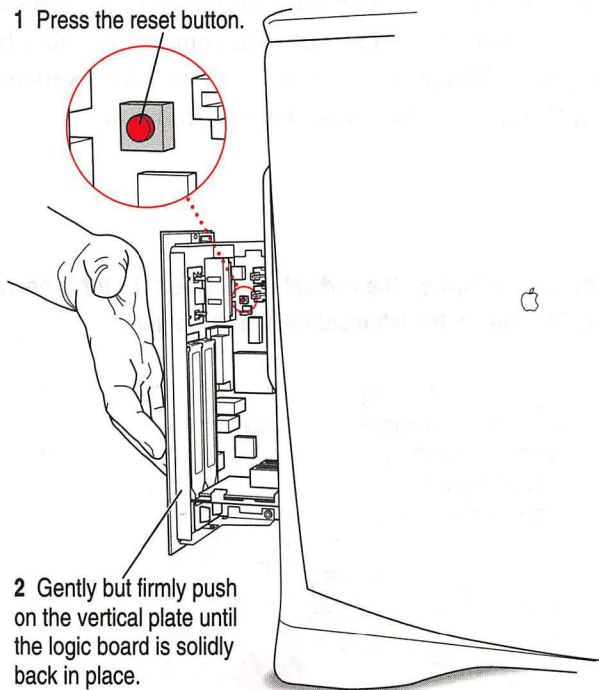
See the manual that came with the card for more information. For instructions on how to select a network connection and other information about using your Macintosh on a network, see the “Networks” topic of Macintosh Guide, available in the Guide (?) menu.

Closing the computer

- 1 Grasping the plastic tabs on the vertical plate, orient the logic board vertically and slide it into the guide rails on the left inside of the computer.

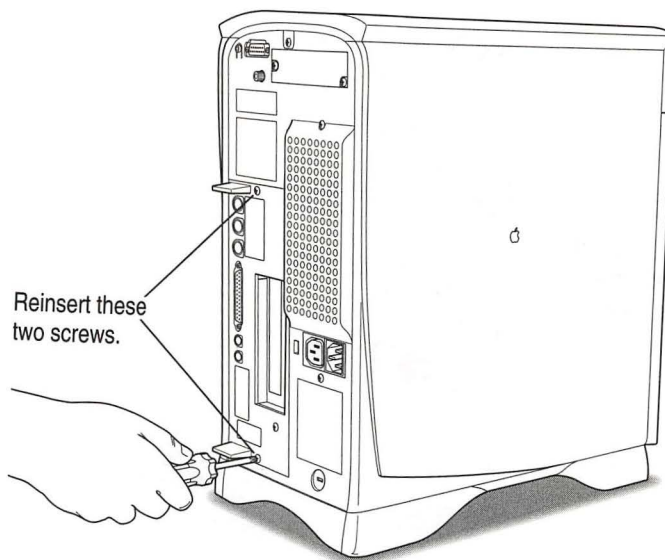


- 2** Press the reset button on the logic board and slide the logic board back into the computer until it snaps into place.

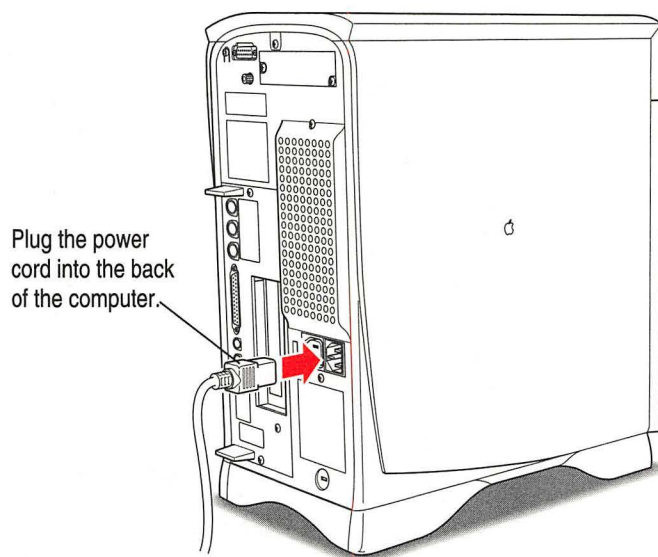


Note: When you press the reset button, some of your computer's software settings will change. You may want to open the control panels for the date and time, keyboard, and mouse to make sure that they are set the way you want. For more information about working with control panels, see the "Customizing Your Computer" topic of Macintosh Guide, available in the Guide (Ⓜ) menu.

3 Reinsert the two screws.



4 Reconnect the power cord.



WARNING To ensure reliable and safe operation of your system, never turn on your computer unless all of its internal and external parts are in place.

Read this appendix for important health and safety instructions, as well as tips on keeping your computer in good working order.



Appendix A

Health, Safety, and Maintenance Tips

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For your own safety and that of your equipment, follow all the instructions in this chapter. Keep these instructions available for reference by you and others.

Health-related information about computer use

Muscle soreness, eye fatigue, and other discomforts and injuries sometimes associated with using computers can occur from performing any number of activities. In fact, misuse of the same muscles during multiple activities can create a problem that might not otherwise exist. For example, if you engage in nonwork activities that involve repetitive stress on the wrist—such as bicycling—and also use your computer’s keyboard improperly, you may increase your likelihood of developing wrist problems. Some individuals are at greater risk of developing these problems because of their health, physiology, lifestyle, and general exposure to stress. Work organization and conditions, such as workstation setup and lighting, also play a part in your overall health and comfort. Preventing health problems is a multifaceted task that requires careful attention to the way you use your body every hour of every day.

The most common health effects associated with using a computer are musculoskeletal discomfort and eye fatigue. We’ll discuss each area of concern below.

Musculoskeletal discomfort

As with any activity that involves sitting for long periods of time, using a computer can make your muscles sore and stiff. To minimize these effects, set up your work environment carefully, using the guidelines that follow, and take frequent breaks to rest tired muscles. To make working with your computer more comfortable, allow enough space in your work area so that you can change position frequently and maintain a relaxed posture.

Another type of musculoskeletal concern is repetitive stress injuries (RSIs), also known as cumulative trauma disorders (CTDs). These problems can occur when a certain muscle or tendon is repeatedly overused and forced into an unnatural position. The exact causes of RSIs are not totally understood, but in addition to awkward posture, such factors as the amount of repetition, the force used in the activity, the individual's physiology, workplace stress level, and lifestyle may affect the likelihood of experiencing an RSI.

RSIs did not suddenly arise when computers were invented; tennis elbow and writer's cramp, for example, are two RSIs that have been with us for a long time. Although less common than other RSIs, one serious RSI discussed more often today is a wrist problem called carpal tunnel syndrome, which may be aggravated by improper use of computer keyboards. This nerve disorder results from excessive pressure on the median nerve as it passes through the wrist to the hand.

This section offers advice on setting up your work area to enhance your comfort while you use your computer. Since the effects of repetitive movements associated with using a computer can be compounded by those of other work and leisure activities to produce or aggravate physical problems, proper use of your computer system must be considered as just one element of a healthy lifestyle.

No one, of course, can guarantee that you won't have problems even when you follow the most expert advice on using computer equipment. You should always check with a qualified health specialist if muscle, joint, or eye problems occur.

Eye fatigue

Eye fatigue can occur whenever the eyes are focused on a nearby object for a long time. This problem occurs because the eye muscles must work harder to view an object that's closer than about 20 feet (6 meters). Improper lighting can hasten the development of eye fatigue. Although eye fatigue is annoying, there's no evidence that it leads to permanent damage.

Whenever you're engaged in an activity that involves close-up work—such as reading a magazine, doing craft work, or using a computer—be sure to have sufficient glare-free lighting and give your eyes frequent rest breaks by looking up and focusing on distant objects. Remember to have your eyes examined regularly.

To prevent discomfort and eye fatigue:

- Arrange your work space so that the furniture is properly adjusted for you and doesn't contribute to an awkward working posture.
- Take frequent short breaks to give your muscles and eyes a chance to rest.

Arranging your office

Here are some guidelines for adjusting the furniture in your office to accommodate your physical size and shape.

- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal and your feet flat on the floor.

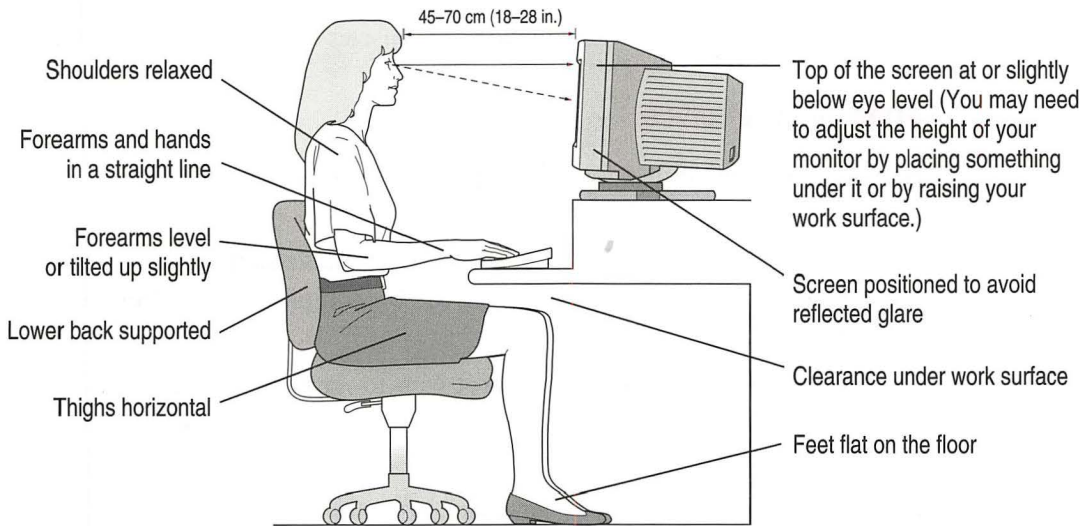
The back of the chair should support your lower back (lumbar region).

Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.

- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.

You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

- Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.
- Arrange the monitor so the top of the screen is slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).
- Position the computer to minimize glare and reflections on the screen from overhead lights and windows.



Avoiding fatigue

- Change your seated position, stand up, or stretch whenever you start to feel tired. Frequent short breaks are helpful in reducing fatigue.
- Use a light touch when typing or using a mouse and keep your hands and fingers relaxed.
- Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.
- Allow adequate workspace so that you can use your keyboard and mouse comfortably. Place papers or other items so you can view them easily while using your computer. A document stand may make reading papers more comfortable.
- Eye muscles must work harder to focus on nearby objects. Occasionally focus your eyes on a distant object, and blink often while you work.
- Clean your screen regularly. Keeping the screen clean helps reduce unwanted reflections.

What about electromagnetic emissions?

There has been recent public discussion of the possible health effects of prolonged exposure to extremely low frequency (ELF) and very low frequency (VLF) electromagnetic fields. Such fields are associated with electromagnetic sources such as television sets, electrical wiring, and some household appliances—as well as computer monitors.

Apple has reviewed scientific reports and sought the counsel of government regulatory agencies and respected health organizations. Based on the prevailing evidence and opinions, Apple believes that the electric and magnetic fields produced by computer monitors do not pose a health risk.

In response to those customers who wish to reduce their exposure to electromagnetic fields, Apple has lowered the emission levels of our products. We are also actively encouraging further scientific research so we can continue to promote the health and safety of our customers and employees.

Safety instructions

For your own safety and that of your equipment, always take the following precautions.

Turn off the computer completely and disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exist:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your Macintosh is exposed to rain or any other excess moisture
- your Macintosh has been dropped or the case has been otherwise damaged
- you suspect that your Macintosh needs service or repair
- you want to clean the case (use only the recommended procedure described later in this chapter)

Be sure that you always do the following:

- Keep your Macintosh away from sources of liquids, such as wash basins, bathtubs, shower stalls, and so on.
- Protect your Macintosh from dampness or wet weather, such as rain, snow, and so on.
- Read all the installation instructions carefully before you plug your Macintosh into a wall socket.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

WARNING Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

Handling your computer equipment

Follow these guidelines for handling your computer and its components:

- When setting up your computer, place components on a sturdy, flat surface, and carefully follow all setup instructions.
- When connecting or disconnecting a cable, always hold the cable by its connector (the plug, not the cord).
- Turn off your computer and all its components before connecting or disconnecting any cables to add or remove any component. Failure to do so could seriously damage your equipment.
- Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match. Make sure that the connector matches the port and that you have positioned the connector correctly in relation to the port.
- Take care not to spill any food or liquid on the computer, keyboard, mouse, or other components. If you do, turn your computer off immediately and unplug it before cleaning up the spill. Depending on what you spilled and how much of it got into your equipment, you may have to bring your equipment to an Apple-authorized service provider.
- Protect the computer and its components from direct sunlight and rain or other moisture.
- Keep all ventilation openings clear and unobstructed. Without proper air circulation, components can overheat, causing damage or unreliable operation.

WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Handling the monitor

Follow these procedures for handling a monitor:

- Turn down the screen brightness control if you leave the computer turned on for extended periods. If the brightness is not turned down, the image on the screen could “burn in” and damage the screen.

You can also use a “screen saver” program, which dims or varies the image on the screen when the computer has been idle for a specified period of time. These programs are available from independent suppliers and user groups.

- Make sure the vents on the computer are clear and unobstructed.
- If there is interference on the monitor’s screen or on a television or radio near your computer, move the affected equipment farther away.

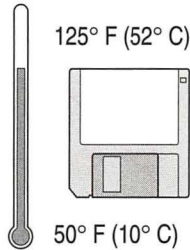
Handling the keyboard

Take care not to spill any liquid on the keyboard. If you do, turn off your computer immediately.

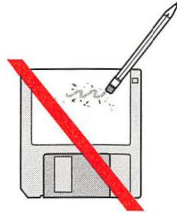
- If you spill liquid that is thin and clear, turn off your computer, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If, after you take these steps, the keyboard doesn’t work, take it to your Apple-authorized service provider for repair.
- If you spill liquid that is greasy, sweet, or sticky, unplug the keyboard and take it to your Apple-authorized service provider for repair.

Handling floppy disks

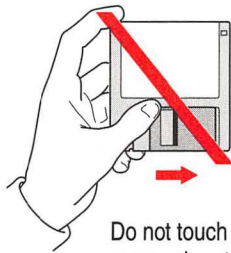
Store disks at temperatures between 50° F and 125° F.



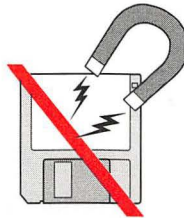
Do not use a pencil or an eraser on a disk or disk label.



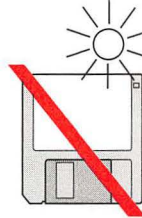
Keep disks dry.



Do not touch the exposed part of the disk behind the metal shutter.



Keep disks away from magnets.



Avoid exposing disks to extremely hot temperatures.

Handling CD-ROM discs

Keep these important safety instructions in mind as you use CD-ROM discs:

- Hold a disc by the edges or by one edge and the center hole. Do not touch the disc surface.
- To clean discs, wipe the shiny surface with a soft damp cloth, working in straight lines from center to edge. Do not use any form of cleaning agent.

- To avoid damage to your discs, keep these points in mind:



Do not expose discs to direct sunlight.



Do not write on discs.



Do not spill liquids on discs.



Do not put tape on discs.



Do not scratch discs.



Do not get dust on discs.

Other important safety instructions to keep in mind as you use your CD-ROM drive:

- Position your computer so that when the tray opens, it doesn't bump into anything.
- Do not leave the disc tray open. If dust gets on the lens of the CD-ROM drive, the drive may have problems reading your compact discs.
- Do not put anything (for instance, a cup) on top of the tray when it is open.
- Do not force the tray open by hand.
- Do not wipe the lens with a paper towel or other abrasive surface. If you need to clean the lens, see an Apple-authorized service provider for a lens cleaner.
- Never transport your computer with a disc inside the CD-ROM drive.
- Keep your computer equipment away from any source of liquid (such as wash basins, bathtubs, and shower stalls). If you drink coffee or other beverages while you're at your computer, take care not to spill.
- Avoid exposing your equipment to damp or wet weather. If your system is near a window, be sure the window is closed in rainy weather.

The tray on your CD-ROM drive automatically closes when you shut down your computer. You may want to open the tray and take out your CD-ROM disc before shutting down.

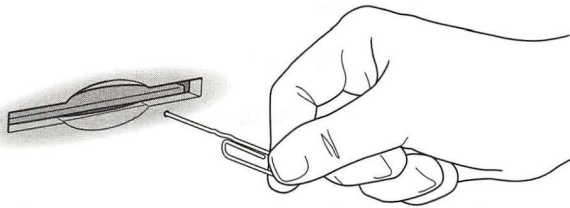
Ejecting a disk

For instructions on ejecting any disk (a floppy disk, a CD-ROM disc, or a removable media disk), see the “Disks” topic of Macintosh Guide, available in the Guide (📖) menu.

If you can't eject a floppy disk

If you can't eject a floppy disk in the usual way, try the following in order:

- Hold down the ⌘ and Shift keys and press the number 1 key on your keyboard to eject a disk in the internal disk drive.
- Shut down the computer. If the disk isn't ejected, then hold down the button on your mouse or other pointing device while you turn the computer on again.
- Locate the small hole near the disk drive's opening, and carefully insert the end of a large straightened paper clip into it. Push gently until the disk is ejected. Do not use excessive force.



If nothing works, take the computer or disk drive to your Apple-authorized service provider to have the disk removed.

Power supply

The power supply in your computer is a high-voltage component and should not be opened for any reason, even when the computer is off. If the power supply needs service, contact your Apple-authorized dealer or service provider.

WARNING To protect the power supply from damage, make sure the voltage switch on the back of the computer is set correctly before you plug the computer into a power outlet. Refer to Chapter 1 for instructions on setting the voltage switch.

Cleaning your equipment

Follow these general rules when cleaning the outside of your computer and its components:

- Use a damp, soft, lint-free cloth to clean the computer's exterior. Avoid getting moisture in any openings.
- Don't use aerosol sprays, solvents, or abrasives.

Cleaning the computer case

To clean the case, do the following:

- 1 Turn off the computer completely and then disconnect the power plug. (Pull the plug, not the cord.)
- 2 Wipe the surfaces lightly with a clean, soft cloth dampened with water.

Cleaning the monitor

To clean the screen, put household glass cleaner on a soft cloth and wipe the screen. Don't spray the cleaner directly on the screen, because the liquid might drip into the monitor.

Cleaning the mouse

The mouse contains a small ball that must roll smoothly for the mouse to work properly. You can keep this ball free of dirt and grease by using the mouse on a clean, lint-free surface and cleaning it occasionally.

You need a few cotton swabs and a clean, soft, lint-free cloth.

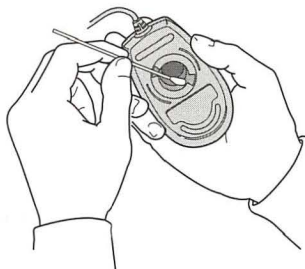
- 1 Turn off your computer.**
- 2 Turn the mouse upside-down and turn the plastic ring on the bottom counterclockwise to disengage it.**



If the mouse is locked, see the next section, “Locking and Unlocking the Mouse,” for instructions on how to unlock it.

- 3 Turn the mouse right-side up with one hand and catch the ring and the ball with your other hand.**
- 4 Clean the three small rollers inside the mouse with a cotton swab moistened with water.**

Rotate the rollers to clean all around them.



- 5** Wipe the mouse ball with a clean, soft, dry, and lint-free cloth.
- 6** If necessary, wash the mouse ball with warm soapy water (use a mild soap such as a dishwashing liquid) and then dry the mouse ball thoroughly.
- 7** Gently blow into the mouse case to remove any dust that has collected there.
- 8** Put the ball and the ring back in place.

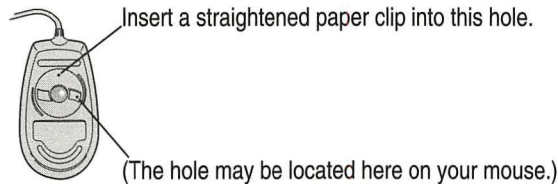
Your mouse should roll smoothly across your mouse pad or desk. If it doesn't, repeat these instructions carefully.

Locking and unlocking the mouse

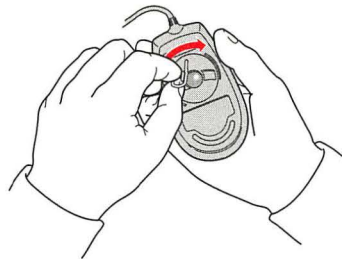
Some mouse devices can be locked so that the ball can't be removed. A locking mouse has a small hole on the plastic ring.

To lock the mouse, follow these steps:

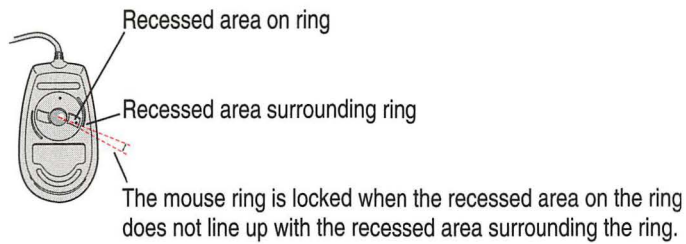
- 1** Insert a straightened paper clip into the hole on the plastic ring.



- 2** Press down on the paper clip while you turn the ring clockwise.

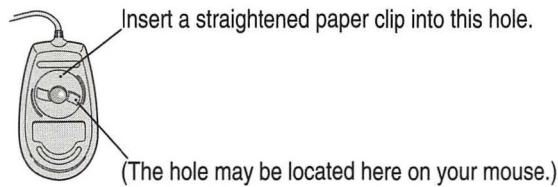


Turn the ring a very short distance, until it stops. When the recessed area on the ring is *not* lined up with the recessed area surrounding the ring, the mouse is locked.

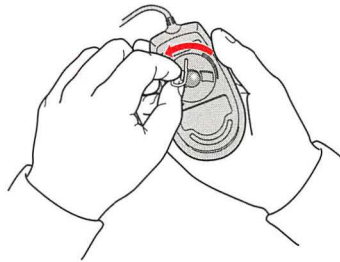


To unlock the mouse, follow these steps:

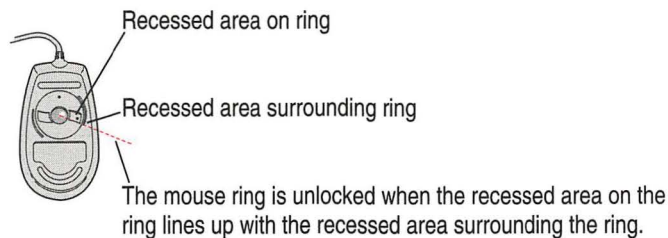
- 1** Insert a straightened paper clip into the hole on the plastic ring.



- 2** Press down on the paper clip while you turn the ring counterclockwise.



Turn the ring a very short distance. When the recessed area on the ring is lined up with the recessed area surrounding the ring, the mouse is unlocked.



Read this appendix to learn
how to install additional
memory in your computer.



Appendix B

Installing Additional Memory

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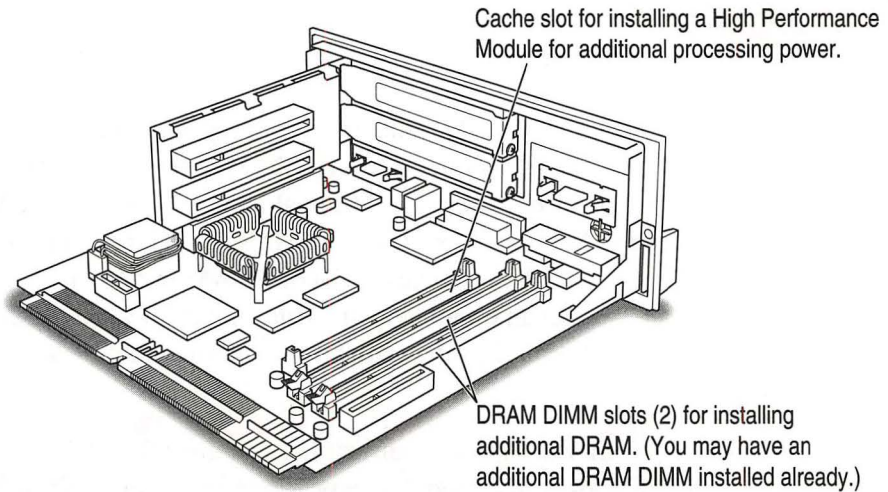
You can install additional memory—dynamic random-access memory (DRAM)—in your computer. DRAM allows you to work with more programs and larger documents. Additional memory comes in packages called Dual Inline Memory Modules, or DIMMs. Altogether, you can install a maximum (total) of 136 megabytes (MB) of DRAM in this Macintosh model. You can also install an optional High Performance Module (level 2 memory cache) in the cache slot in your computer for additional processing power.

WARNING Although instructions for installing DIMMs and a High Performance Module are provided in this manual, Apple Computer strongly recommends that you have an Apple-certified technician install additional DRAM or High Performance Modules. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service. If you install additional DIMMs yourself, you risk damaging your equipment, and this damage is not covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

For more information about memory, see the “Memory” topic of Macintosh Guide, available in the Guide (⌘) menu.

You should have an Apple-certified technician install additional DRAM for you. However, you may feel comfortable installing DRAM yourself.

- If you want to install additional DRAM yourself, you must purchase the memory chips, or DIMMs, from an Apple-authorized dealer. Then follow the instructions in this appendix.
- If you want an Apple-certified technician to install additional DRAM for you, see the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service.



DRAM configurations

Your computer can use any DRAM configuration with DIMMs of these sizes: 8 MB, 16 MB, 32 MB, or 64 MB. The exact configuration depends on the density of the DRAM chips that are mounted on the DIMMs. (The DIMMs support a 4K refresh rate.)

You can increase your computer's DRAM to up to a maximum of 136 MB. Your computer already comes with 8 MB soldered on your computer's main logic board plus 8 MB installed in one of the DIMM slots, for a total of 16 MB of DRAM. One DIMM slot remains for installing an additional 8-MB, 16-MB, 32-MB, or 64-MB DIMM, for a total of 24 MB, 32 MB, 48 MB, or 80 MB of DRAM respectively. (If you want to install the maximum amount of memory, you need to replace the 8-MB DIMM already installed in one of the DIMM slots with a 64-MB DIMM, and then install a 64-MB DIMM in the remaining slot, for a total of 136 MB of DRAM.)

IMPORTANT The DIMMs should be 64-bit wide, 168-pin fast-paged mode, with 70-nanosecond (ns) RAM access time or faster. The Single Inline Memory Modules (SIMMs) from older Macintosh computers are not compatible with your computer and should not be used.

If you decide to have additional DRAM installed in your computer, the DIMMs can be installed one at a time in any order in either of the memory slots.

High Performance Module configurations

A High Performance Module (level 2 memory cache) provides an overall increase in your computer's performance. Although the megahertz processor speed stays the same when you install a High Performance Module (see your *Technical Information* booklet for the exact speed), your computer performs tasks significantly faster with a High Performance Module installed. You can add a High Performance Module by installing the module on the main logic board of your computer.

Installing the DIMM or High Performance Module

Installing memory involves three steps:

- opening the computer
- inserting the DIMM or High Performance Module into a specific slot
- closing the computer

Opening the computer

IMPORTANT To avoid generating static electricity (from your body) that may damage components, do not walk around the room until you have completed the installation of the DIMM or High Performance Module and closed the computer. Additionally, move the logic board as little as possible while it is outside the computer case.

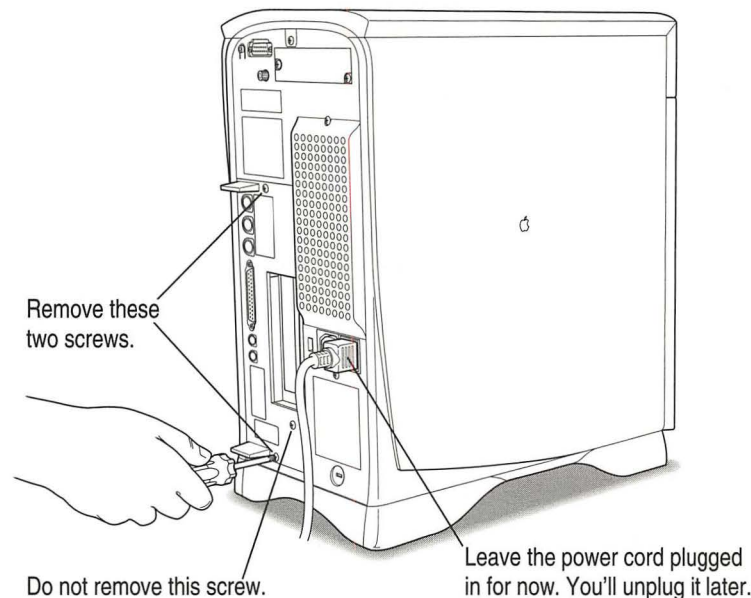
- 1 **Shut down your computer by choosing Shut Down from the Special menu.**

You can also press the Power key (marked with a \triangleleft) on the keyboard.

- 2 **Unplug all the cables except the power cord from the computer (including the cable that connects your keyboard to the computer).**

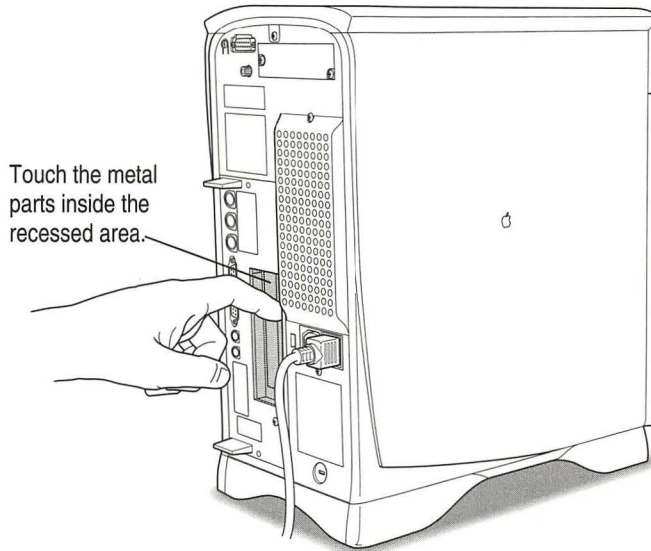
Leaving the power cord plugged in helps protect the computer from electrostatic discharge damage. (You'll unplug the power cord later.)

- 3 **With a screwdriver, remove the two screws shown here from the computer's back panel.**



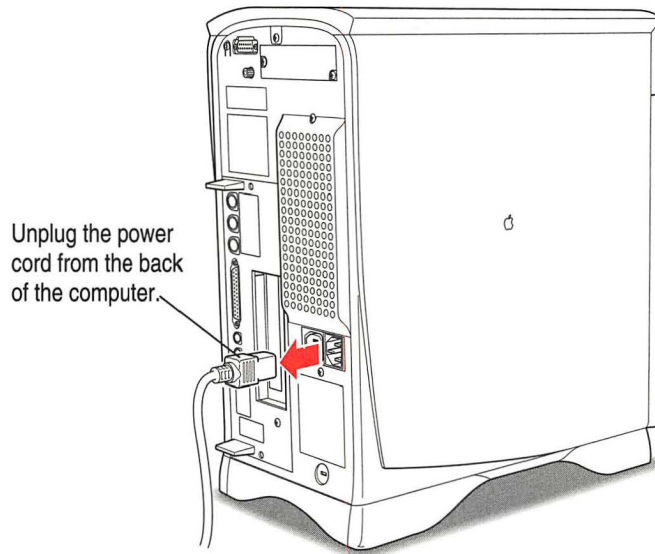
- 4 **Touch the recessed metal plates in the back panel to discharge static electricity from your body.**

Always do this before you touch any parts, or install any components, inside the computer. This discharges static electricity from your body and helps protect components inside the computer from being damaged by static electricity discharge.

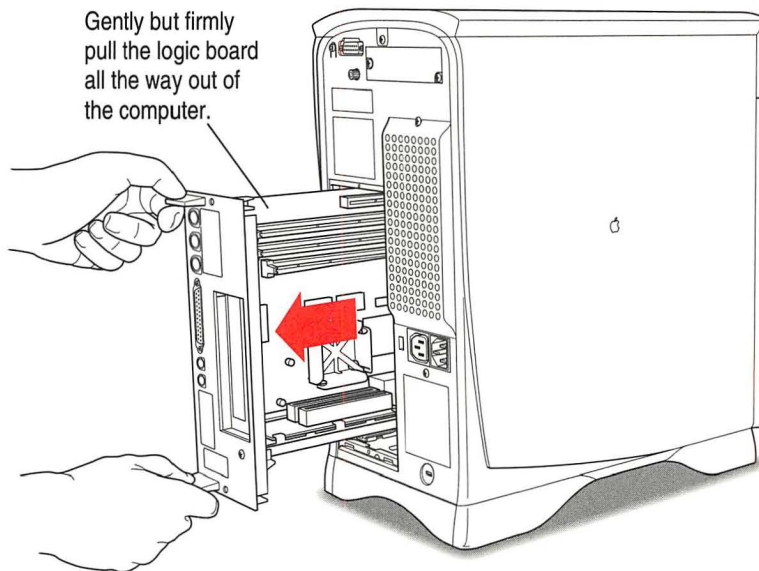


5 Unplug the power cord from your computer.

You can unplug the power cord now that you discharged static electricity in the previous step.

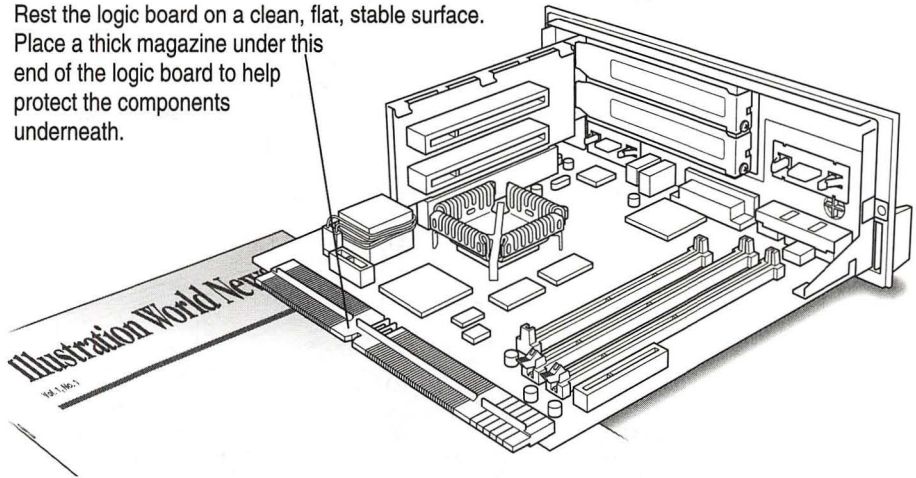


6 Grasping the two plastic tabs, pull the panel toward you until the logic board slides out.



- 7** Pull the logic board all the way out and set it on a clean, flat, stable surface. Rest the end of the logic board on a thick magazine or a thin book to protect the components underneath.

Rest the logic board on a clean, flat, stable surface. Place a thick magazine under this end of the logic board to help protect the components underneath.

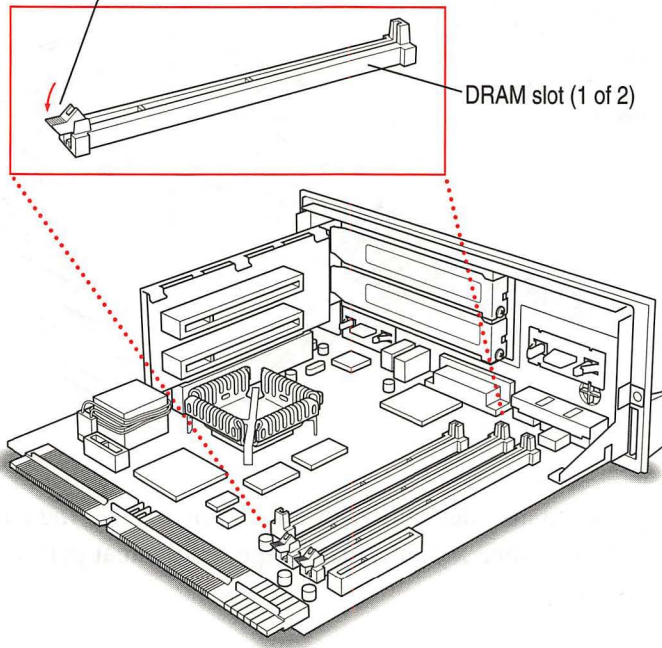


What you do next depends on whether you're installing a DRAM DIMM or a High Performance Module. Skip to the section that pertains to the item you are installing.

Installing a DRAM DIMM

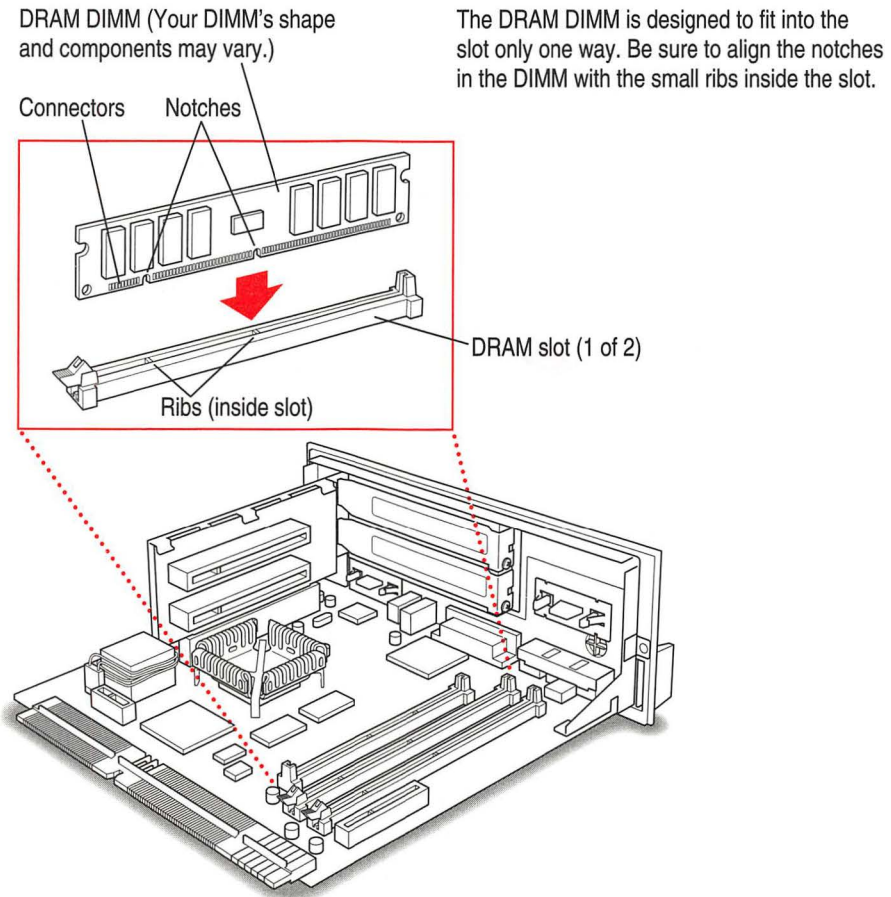
- 1 Push the ejector on the DRAM slot outward and down to open it.

Push the ejector outward and down to open it.



- 2 With the ejector in the “open” position, align the DRAM DIMM in the DRAM sockets as pictured.

IMPORTANT Do not touch the DIMM’s connectors. Handle the DIMM only by the edges.



- 3 Push down on the DIMM until it snaps into place.

The ejector closes automatically.

- 4 Repeat steps 1–3 if you need to install another DRAM DIMM into the other slot.

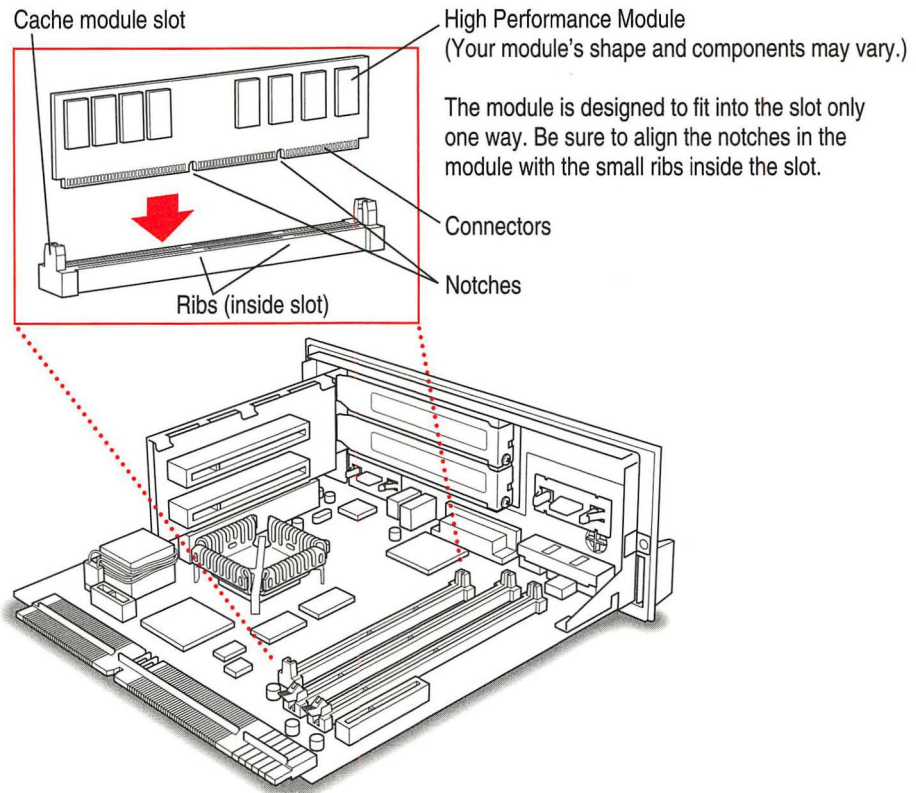
- 5 If you have a High Performance Module to install, proceed to the next section, “Installing a High Performance Module into the Cache Module Slot.” If you are finished installing memory in your computer, proceed to “Closing the Computer.”

Installing a High Performance Module into the cache module slot

- 1 Aligning the notches in the module with the small ribs inside the cache module slot, insert the module in the slot as pictured.

The module is designed to fit into the slot only one way. Be sure to align the notches in the module with the small ribs inside the slot.

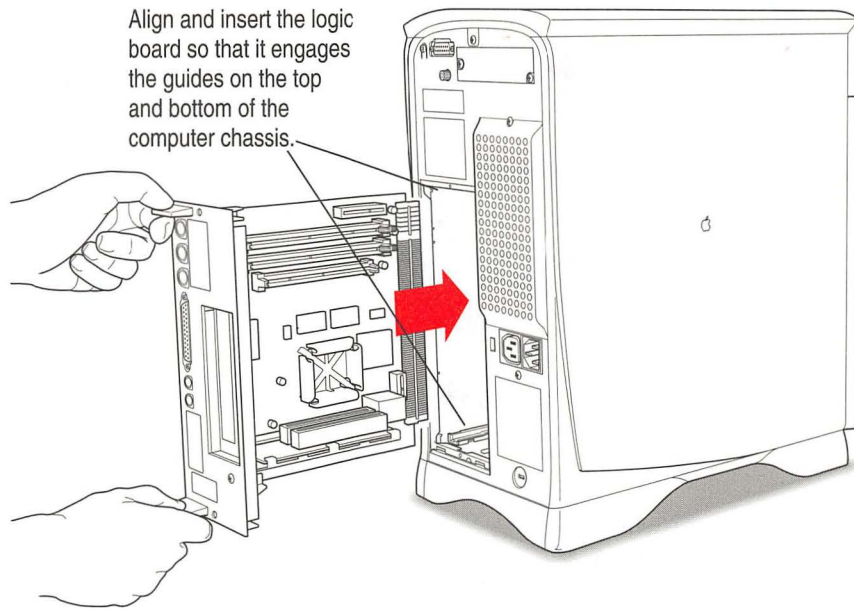
IMPORTANT Do not touch the module's connectors. Handle the module only by the edges.



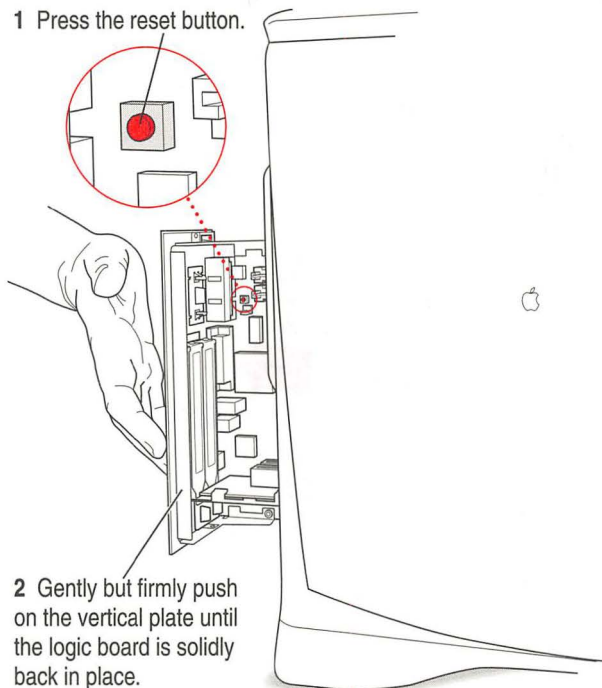
- 2 If you are finished installing items in your computer, proceed to "Closing the Computer."

Closing the computer

- 1 Grasping the plastic tabs on the vertical plate, orient the logic board vertically and slide it into the guide rails on the left inside of the computer.

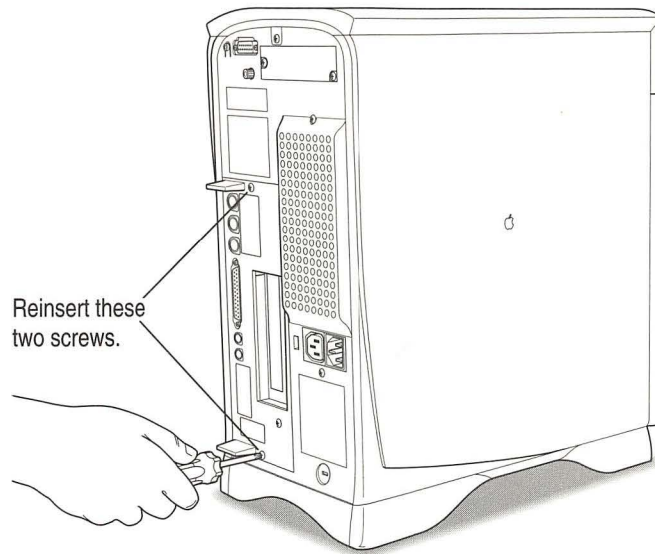


- 2** Press the reset button on the logic board and then slide the logic board back into the computer until it snaps into place.

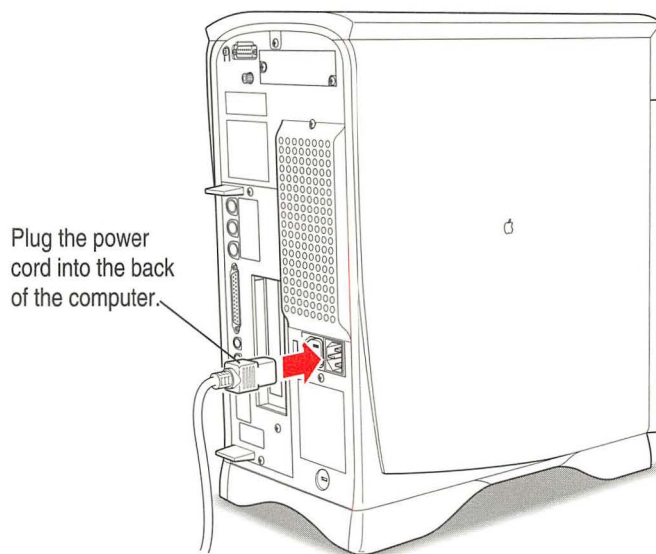


Note: When you press the reset button, some of your computer's software settings will change. You may want to open the control panels for the date and time, keyboard, and mouse to make sure that they are set the way you want them. For more information about working with control panels, see the "Customizing Your Computer" topic of Macintosh Guide, available in the Guide (📖) menu.

3 Reinsert the two screws.



4 Reconnect the power cord.



WARNING To ensure reliable and safe operation of your system, never turn on your computer unless all of its internal and external parts are in place.

Read this appendix to learn
how to use the special
keys on your keyboard.

Appendix C

Special Keys on Your Keyboard

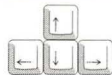
.....

Your computer keyboard contains certain special keys that typewriter keyboards don't have. Many of these keys allow you to give commands to the computer without using the mouse. For example, in many application programs, pressing the ⌘ (Command) key at the same time as the Q key lets you quit a program.

The following table describes what you can do with the special keys on your keyboard. The special keys on your keyboard depend on the model of keyboard you have; some keyboards do not have all the keys listed.

Special keys on Apple keyboards

Arrow keys



Use to move the insertion point, as an alternative to using the pointer. In some programs, the arrow keys have other functions.

Caps Lock key



Use to capitalize a series of letters (numbers and symbols aren't affected).

Clear key



Use to delete the current selection (or use the Delete key). In some programs, Clear has other functions.

⌘ (Command) key



Use in combination with other keys as an alternative to choosing a menu command.

continued ►

Special keys on Apple keyboards *(continued)*

Control key



In combination with other keys, this key provides shortcuts or modifies other actions.

Delete key



Use to delete selected material, or the character to the left of the insertion point.

Enter key



In a dialog box, pressing Enter is the same as clicking the outlined button. In some programs, pressing this key confirms information you have provided.

Escape key



The function of this key depends on the program you're using.

Function keys



Some programs allow you to use the 12 function keys to give commands. You can assign commands or action sequences to function keys with special utility programs.

Option key



Use in combination with other keys to produce special characters or modify actions.

Numeric keys



Use to produce numbers and mathematical symbols; some programs use these keys as function keys to initiate actions.

Power key



On some models, press to turn on the computer. Also press to shut down the computer on certain models.

Return key



Use to move the insertion point to the beginning of the next line. In a dialog box, pressing Return is the same as clicking the outlined button.

Shift key



Use to produce capital letters (or the upper character on the key).

Tab key



Use to move the insertion point to the next stopping place (such as a tab stop or field in a dialog box or program).

Other special keys

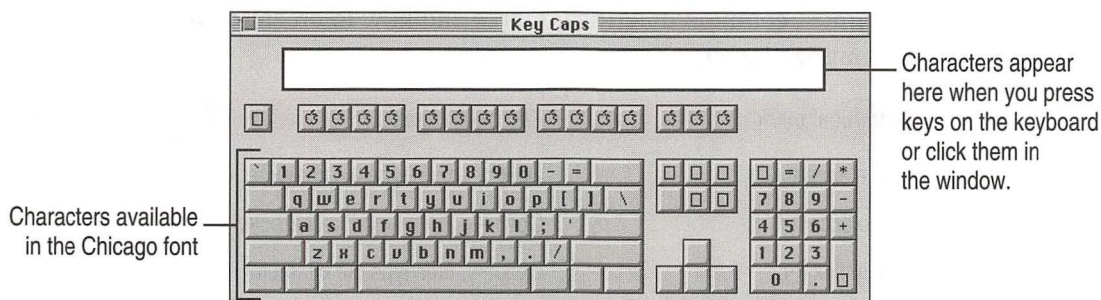


The function of these keys depends on the operating system and program you're using.

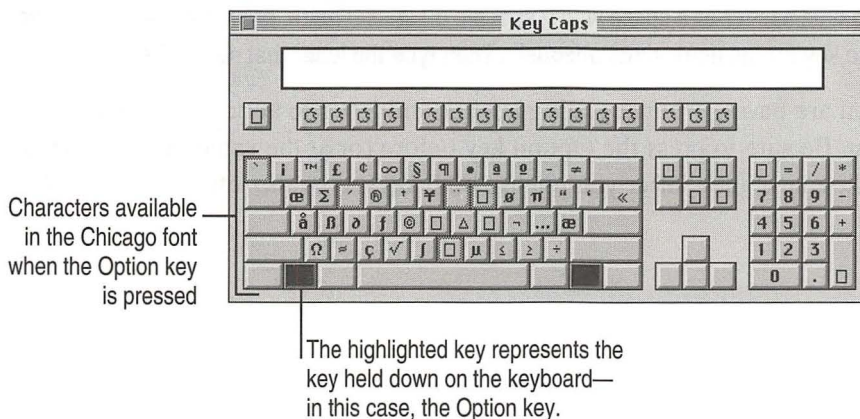
Typing special characters and symbols

You can type a variety of international and other special symbols and characters (including characters with diacritical marks, such as accents) by pressing combinations of keys.

The Key Caps program, which is installed with your system software, shows you the characters produced when you type certain keys and key combinations in the fonts available on your computer. Choose Key Caps from the Apple (🍏) menu, then choose the font from the Key Caps menu.



To have Key Caps show more options for special characters, press each of these keys or key combinations: Option, Shift, Shift-Option, Shift-⌘, and Option-⌘.



If you press the Option key, Key Caps outlines lightly the keys that you can use in combination with letter keys to type letters with accents or other diacritical marks.

Note: If you see rectangles instead of diacritical marks on some of the pictures of keys in Key Caps, try pressing Option-x to see the diacritical marks. However, use the Option key (not Option-x) in combination with the other keys to type letters with diacritical marks.

If you press the Option key at the same time as a key for a specific diacritical mark and then release both keys, Key Caps outlines in bold the keys for letters that can be typed with that mark. (You'll see that most key combinations for diacritical marks can be used with the Space bar as well as letter keys—producing the mark without a letter.)

The most common diacritical marks and how to create them are summarized next.

Diacritical mark	Key combination
Grave accent (`)	Option-`, then type the character
Acute accent (´)	Option-e, then type the character
Circumflex (^)	Option-i, then type the character
Tilde (~)	Option-n, then type the character
Umlaut (¨)	Option-u, then type the character
The letter "c" with a cedilla (ç)	Option-c

- **To type a letter or a space with a specific diacritical mark, press the Option key and the key for the mark simultaneously. Then type the letter that needs the mark.**

If you are having trouble getting a mark and letter to appear together, try again. Be sure to press the Option key before (or at the same time as) the key for the mark; then, after you release both keys, type the letter to be marked.

Special key combinations

If difficulties with your mouse or computer don't allow you to use standard methods of quitting a program or restarting your computer, you can try using these special key combinations.

To do this press this key combination
Force a program to quit	⌘-Option-Esc
Force the computer to restart	⌘-Control-Power key
Start the computer from a CD-ROM disc	C key (at startup)
Ignore the selected startup device	⌘-Option-Shift-Delete
Turn off system extensions	Shift key (while starting up)
Start the Extensions Manager	Space bar (while starting up)
Rebuild the desktop	Option-⌘ (while starting up)

If you can't find what you're looking for
in this index, look in Macintosh Guide—
available in the Guide (⌘) menu
on your computer.



Index

• • • • •

A

- accent marks, typing 182
- ADB port. *See* Apple Desktop Bus (ADB) port
- Apple-authorized service provider
 - installing expansion cards 128
 - installing memory 165, 166
 - replacing or adding internal storage devices 57
 - spills on computer 155
 - troubleshooting and 76, 77
- AppleCD Audio Player program 42, 69, 72, 92
- Apple customer support hotline 23
- Apple Desktop Bus (ADB) port
 - connecting keyboard cable to 9
 - connecting mouse cable to 8
 - location of 39
 - purpose of 38
- Apple Ethernet media adapter 126
- Apple Extras folder
 - preinstalled programs in 59
 - Read Me files in 23
- Apple menu. *See also* Control Panels (Apple menu)
 - AppleCD Audio Player 42, 69, 72, 92
 - Key Caps 181–182
- Apple Omni microphone not supported 46
- Apple PlainTalk Microphone
 - connecting 46–48
 - extended miniplug and 44
 - recording with 48
 - troubleshooting 93
- AppleTalk network 125
- AppleTalk Phase 2 Protocols for Ethernet networks 126
- application icon 20, 62, 78
- Application menu 19, 62
- application programs
 - accidentally deleting 81
 - AppleCD Audio Player 69, 72, 92
 - Apple Video Player program 60
 - backup copies of 63–64
 - designed for older Macintosh computers 92
 - designed for PowerPC microprocessor 65, 92
- Disk First Aid 106–107
- displaying windows in 62
- Drive Setup 83, 105, 108–109
- guidelines for using 60
- increasing memory for 63
- installing 60–61
- Key Caps 181–182
- memory used by 65, 86
- opening 59, 86, 90

- application programs (*continued*)
 - preinstalled 59
 - putting into the Launcher 60
 - quitting 77, 86, 179, 183
 - Restore All Software 118
 - Restore System Software 115–116
 - screen savers 156
 - switching between 62
 - system error and 87
 - troubleshooting 60, 86–92, 93
 - working with several at a time 62–63
- arrow keys 179
- arrow on screen. *See* pointer
- arrows, scroll 20
- At Ease (alternative to Macintosh desktop) 85
- audio. *See* sound
- audio CDs
 - ejecting 69–70
 - file formats for 71
 - playing 71, 72
 - troubleshooting 94, 98–99
- audio connectors 44
- audio equipment, connecting 40–52
- audio tracks on CD-ROM discs
 - playing 71, 72
 - troubleshooting 98–99

B

- backing up information on a disk 63–64
- balance control, subwoofer 42, 51, 92
- Balloon Help 34
- blinking question mark on screen 81, 113
- bomb icon 75, 77, 87

C

- cables
 - Ethernet network and 125, 126
 - for SCSI devices 54–55
 - handling 155
 - keyboard cable 8, 9
 - monitor video cable 7

- mouse cable 8, 9
- SCSI peripheral interface cable 54
- SCSI system cable 54
- cache module. *See* High Performance Module
- cache module slot 127, 166, 174
- Caps Lock key 179
- cards
 - communication card 140–145
 - Ethernet card 125–126, 145
 - expansion card 127–148
 - internal communication card 39
 - TV tuner card 39
 - video input card 3
- caret prompt on screen 93
- carpal tunnel syndrome 150
- case
 - cleaning 160
 - closing 145–148, 175
 - opening 129–133, 168–171
- CD-ROM disc icon 69
- CD-ROM discs. *See also* CD-ROM drive; *Macintosh Performa* CD discs
 - At Ease desktop alternative on 85
 - audio CDs 71, 72, 98–99
 - audio tracks on 71, 72, 98–99
 - capacity of 67
 - cleaning 97, 157
 - ejecting 69–70, 94, 97
 - file formats for 70–71
 - file sharing and 69
 - handling 157–159
 - inserting into drive 68–69
 - installing programs from 61
 - opening documents on,
 - troubleshooting 97
 - Photo CDs 71, 72–74, 99–100
 - polishing 97
 - safety precautions for 157–158
 - sharing over network 74
 - small (8 cm) discs 68
 - starting up from 85, 102–103
 - troubleshooting 94, 96–99, 102–103
 - types available 67, 70–71

- CD-ROM drive 67–74. *See also*
 - CD-ROM discs
 - avoiding damage to 70
 - cleaning lens on 158
 - closing 69, 70
 - discs compatible with 67
 - ejecting disc from 69–70, 94
 - illustration of 38
 - inserting disk into 68–69
 - Open/Close button for 68, 69, 70
 - opening tray of 68, 95–96
 - replacing 67
 - safety precautions for 158
 - SCSI ID number for 53
 - spills on 158
 - troubleshooting 94–96
- Chooser, LocalTalk network and 125
- cleaning
 - CD-ROM discs 97, 157
 - CD-ROM drive lens 158
 - computer case 160
 - keyboard 156
 - mouse 88, 161–162
 - screen 153
 - spills 155, 156
- Clear key 179
- clock/calendar, troubleshooting 80
- close box on windows 20
- closing
 - CD-ROM drive tray 69, 70
 - computer 145–148, 175
 - Macintosh Guide 33
 - windows 20
- Command key 179
- commands
 - Eject CD (File menu) 69
 - Eject Disk (Special menu) 69, 94
 - Empty Trash (Special menu) 20
 - Hide Balloons (Guide menu) 34
 - Hide Finder (Application menu) 62
 - Hide Others (Application menu) 62
- keyboard 183
- Macintosh Guide (Guide menu) 26
- menus of 20
- Open (File menu), shortcut for 35
- Put Away (File menu) 69, 94
- Quit (File menu) 77
- Restart (Special menu) 77
- Shortcuts (Guide menu) 35–36
- Show All (Application menu) 62
- Show Balloons (File menu) 34
- Shut Down (Special menu) 21
- communication card
 - compatible vs. incompatible 141
 - Ethernet card 144–145
 - installing 140–145
- communication slot 124, 127, 141, 142, 143
- communications regulation information vii–viii
- compact discs. *See* CD-ROM discs
- computer equipment. *See* equipment
- connecting
 - Apple PlainTalk microphone 46–48
 - audio equipment 40–52
 - cables 155
 - connector into port 155
 - to Ethernet network 124, 125–126
 - external SCSI devices 53–56
 - keyboard 8–10
 - modem 10–11
 - monitor 5–7
 - mouse 8–10
 - to a network 123–126
 - to LocalTalk network 124, 125
 - power cord 5, 6
 - SCSI devices 53–56
- connectors
 - audio 44
 - internal modem 11
 - plugging into port 155
- Control key 180

- Control Panels (Apple menu)
 - Extensions Manager control panel 78, 79
 - incompatible 86–88
 - Macintosh Easy Open control panel 78, 79
 - MacTCP control panel 126
 - Memory control panel 63, 65
 - Monitors & Sound control panel 42–43, 47–48
 - Network control panel 125, 126
 - PC Exchange control panel 84, 90
- copying
 - information on a disk 63–64
 - Macintosh Performa CD: Performa Software* files to hard disk 120
- cumulative trauma disorders (CTDs) 150
- cursor. *See* pointer
- customer support hotline 23

D

- Delete key 180
- desk accessories
 - switching between 62
 - working with several at a time 62–63
- desktop
 - alternative to (At Ease) 85
 - appearance of 14
 - hard disk icon does not appear on 83
 - hiding and showing windows on 62
 - rebuilding 78–79, 83
- device drivers for SCSI devices 56
- diacritical marks, typing 182
- dialog boxes 77
- DIMMs. *See* DRAM DIMMs
- discs. *See* CD-ROM discs; *Macintosh Performa CD* discs
- disk drives. *See* floppy disk drive; hard disk
- Disk First Aid program 106–107

- disk icon
 - with blinking question mark 81, 112, 113
 - with X 82
- disks. *See* floppy disks; hard disk
- display. *See* screen
- document icon 20
- documents
 - copying 63–64
 - Documents folder 23
 - DOS, troubleshooting 91
 - opening on CD-ROM disc 97
- Documents folder 23
- DOS disks, troubleshooting 84
- DOS documents, troubleshooting 91
- DRAM

- configurations 166–167
 - defined 165
- DRAM DIMMs. *See also* memory
 - avoiding damage to 165
 - installing 167–173, 175–178
 - maximum amount installed 165
 - purpose of 165
- DRAM DIMM slots 127, 166, 167, 172, 173
- drivers
 - for printers 102
 - for SCSI devices 56
- Drive Setup program on *Macintosh Performa CD: Performa Software* 83, 105, 108–109
- Dual Inline Memory Modules (DIMMs). *See* DRAM DIMMs
- dynamic random-access memory. *See* DRAM

E

- Easy Access, turning off 89
- Eject CD command (File menu) 69
- Eject Disk command (Special menu) 69, 94

- ejecting
 - audio CDs 69–70
 - CD-ROM discs 69–70, 94, 97
 - floppy disks 85, 159
- electrical safety 4, 154
- electromagnetic emissions 153
- Empty Trash command (Special menu) 20
- Enter key 180
- equipment
 - arranging 5
 - handling 155–160
 - posture while using 150
 - spills on 154, 155, 156
- erasing disks. *See* initializing
- error message 75, 76–77, 87. *See also* troubleshooting
- errors. *See* troubleshooting
- Escape key 180
- Ethernet card 125, 127, 140, 144–145
- Ethernet media adapter 126
- Ethernet network, connecting to 124, 125–126
- EtherTalk Phase 1 protocol not supported 126
- EtherTalk Phase 2 protocol 126
- expansion bay 38
- expansion cards
 - communication cards 140–145
 - Ethernet 125, 127, 140, 144–145
 - installing 127–148
 - PCI cards 124, 134–139
 - purpose of 127
 - types of 127–128
 - warning about 128
- extended miniplug 44
- extensions
 - incompatible 86, 87
 - saving 78
 - turning off before rebuilding desktop 78
- Extensions Manager control panel 78, 79
- Extensions Manager, starting 183

- exterior of computer. *See* case
- external microphone. *See* Apple PlainTalk Microphone
- external modem port 11, 38
- external speakers
 - built-in subwoofer and 42, 49, 51, 92
 - connecting 49–51
- eye fatigue 151

F

- fatigue
 - eye 151
 - general 153
- FDDI network, connecting to 124
- file formats for CD-ROM discs 70–71
- File menu
 - Eject CD command 69
 - Open command, keyboard shortcut for 35
 - Put Away command 69, 94
 - Quit command 77
- files
 - backing up 63–64
 - copying from *Macintosh Performa CD: Performa Software* 59, 120
 - failure to find 91
- file sharing
 - CD-ROM discs and 74
 - ejecting CD-ROM discs 69
- Finder
 - activating 26, 53
 - Macintosh Guide and 26, 53
 - shortcuts for commands in 35–36
- floppy disk drive
 - location of 38
 - replacing 67
- floppy disks
 - backing up 63–64
 - creating a startup floppy disk 121
 - DOS 84
 - ejecting 61, 85, 159

- floppy disks (*continued*)
 - handling 157
 - initializing 84
 - inserting 61
 - installing programs from 61
 - protecting information on 63–64
 - repairing 106–107
 - starting up from 63, 121
 - storing 157
 - troubleshooting 84, 85, 106–107, 159
- folders
 - Apple Extras folder, Read Me files
 - in 23
 - Documents folder 23
 - icon for 20
- formats for CD-ROM discs 70–71
- formatting disks. *See* initializing
- function keys 180
- furniture, arranging for comfort 151–152

G

- glare on screen 151, 152
- graphics, Photo CD images as source
 - of 73
- grounded outlet 4, 155
- grounding plug 2, 4
- Guide menu
 - Hide Balloons command 34
 - icon for 19, 25
 - Macintosh Guide 25–36
 - overview 25
 - purpose of 19
 - Shortcuts 35–36
 - Show Balloons command 34
- Guide menu icon 19

H

- hard disk
 - backup up files on 63–64
 - copying *Macintosh Performa CD*:
 - Performa Software* files to 120
 - damaged 104–109, 121
 - icon not appearing on desktop 83
 - initializing 108–109
 - inserting and ejecting floppy disk 61
 - installing application programs on
 - 60–61
 - installing system software on
 - 111–121
 - location of 38
 - protecting information on 121
 - rebuilding desktop on 78–79, 83
 - repairing 104–109
 - replacing 57
 - restoring information on 64
 - testing 102, 105
 - using for additional memory 65
- hard disk icon
 - appearance of 20
 - failure to appear on desktop 83
- headphone jack 38, 41, 52
- headphones
 - connecting 52
 - subwoofer and 41, 52, 92
 - troubleshooting 92
- health-related information 149–153. *See also* safety precautions
 - arranging your office 151–152
 - electromagnetic emissions 153
 - eye fatigue 151
 - general fatigue 153
 - musculoskeletal discomfort 150
 - posture 151–152
- help, sources of 23, 25–36. *See also*
 - Apple-authorized service provider; Balloon Help;
 - customer support hotline; Guide menu; Macintosh Guide;
 - troubleshooting

- HFS file format 71
- Hide Balloons command (Guide menu) 34
- Hide Finder command (Application menu) 62
- Hide Others command (Application menu) 62
- Hierarchical File System file format 71
- High Performance Module. *See also* memory
 - cache slot for 166
 - configurations for 167
 - installing 167–171, 174–178
 - purpose of 165
- high-resolution Photo CD images 74
- High Sierra discs 71, 98
- hotline for customer support 23
- “Huh?” button in Macintosh Guide window 33

I, J

- icons 20
 - ADB (Apple Desktop Bus) icon 8, 9
 - appearing incorrectly on screen 83
 - application icon 20, 62, 78
 - blinking question mark icon 81, 112, 113
 - bomb icon 75, 77, 87
 - CD-ROM disc icon 69
 - dimmed icons 62
 - Disk First Aid icon 106
 - disk icon with blinking question mark 81, 112, 113
 - disk icon with X 82
 - document icon 20
 - Drive Setup icon 105
 - folder icon 20
 - Guide icon 19, 25
 - hard disk icon 20, 83
 - microphone icon 40
 - opening 20
 - Restore System Software icon 115

- “sad Macintosh” icon 82
- SCSI icon 53
- speaker icon 40
- Trash icon 20
- Index button in Macintosh Guide 27, 29–30
- initializing
 - DOS disks 84
 - floppy disks 84
 - hard disk 108–109
- insertion point, setting 88
- installing
 - application programs 60–61
 - expansion cards 127–148
 - memory 165–178
 - system software 111–121
- internal communication card 39
- internal hard disk. *See* hard disk
- internal modem card 140
- internal modem, communication slot for 127
- internal modem connector 11
- internal speaker, location of 41
- International Standards Organization file format 71
- ISDN network, connecting to 124
- ISO 9600 discs 71, 98

K

- keyboard
 - adjusting angle of 10
 - connecting 8–10
 - handling 156
 - posture for 151–152
 - shortcuts with. *See* keyboard shortcuts
 - special keys on 179–183
 - spills on 155, 156
 - troubleshooting 89–90
 - typing special characters and symbols on 181–182
- keyboard cable 9

- keyboard shortcuts (key combinations)
 - 35–36
 - for Finder tasks 35–36
 - to eject floppy disk 85
 - to force an application program to quit 183
 - to force computer to restart 183
 - to ignore the selected startup device 183
 - to quit application program 77, 179
 - to rebuild the desktop 183
 - to restart computer when Restart button cannot be chosen 77
 - to start the computer from a CD-ROM disc 183
 - to start the Extensions Manager 183
 - to turn off system extensions 183
- Key Caps program 181–182
- key combinations. *See* keyboard shortcuts

L

- Launcher 14
 - opening application programs in 59
 - putting application programs into 60
 - quitting programs in 93
 - Service/Support area of 77
- level 2 memory cache. *See* High Performance Module
- local area network. *See* network
- LocalTalk network, connecting to 124, 125
- locking and unlocking mouse 162–163
- logic board
 - installing DRAM DIMM on 172–173
 - installing High Performance Module on 174
 - removing 132–133, 170–171
 - replacing 145–146, 175
 - reset button on 146, 176
- Look For button in Macintosh Guide 27, 31–32

M

- Macintosh desktop. *See* desktop
- Macintosh Easy Open control panel 78, 79
- Macintosh Guide command (Guide menu) 26
- Macintosh Guide (Guide menu) 26–33
 - “Huh?” button in 33
 - moving 26
 - opening 26
 - overview 25–36
 - searching for specific topics in 27, 31–32
 - tips for using 33
 - viewing list of topics in 27–28
 - viewing topics alphabetically in 27, 29–30
- Macintosh Guide window
 - closing 33
 - Index button 27, 29–30
 - Look For button 27, 31–32
 - moving 26, 33
 - opening 26
 - returning to 28
 - Topics button 27–28
- Macintosh Performa CD: Guided Tour* 113, 117, 119–120
- Macintosh Performa CD: Performa Software*
 - checking for damaged disk with 105
 - copying its files to hard disk 120
 - Drive Setup program on 83, 105, 108–109
 - initializing hard disk with 108–109
 - preinstalled applications on 59
 - reinstalling system software with 112–117
 - starting up from 102–103
- Macintosh Performa CD* discs 121
- MacTCP control panel, Ethernet networks and 126

- maintenance
 - CD-ROM discs 97, 157–159
 - CD-ROM drive 158
 - cleaning computer equipment 160–162
 - floppy disks 157
 - keyboard 156
 - monitor 156, 160
 - mouse 88, 161–162
 - screen 153
 - memory
 - clearing to solve problems 77
 - DRAM configurations 166–167
 - DRAM DIMMs 172–173
 - High Performance Module 167, 174
 - installing 165–178
 - ROM (read-only memory) 67
 - running out of 63
 - used by application programs 65
 - used by Photo CDs 74
 - using hard disk as 65
 - virtual 63
 - Memory control panel
 - older Macintosh programs and 65
 - virtual memory and 63, 86
 - menu bar 19
 - menus 19
 - Apple menu 69, 72, 181
 - Application menu 20, 62–63
 - File menu 35, 69, 77
 - Guide menu 20, 34, 35
 - opening 19
 - Special menu 19, 21, 77
 - microphone icon 40
 - microphones
 - Apple PlainTalk Microphone 44, 46–48
 - monitor with built-in microphone 93
 - troubleshooting 93
 - modem, connecting 10–11
 - modem port 38, 39, 124
 - Modern Memory Manager, older
 - Macintosh programs and 65
 - monitor. *See also* screen
 - brightness control 156
 - cleaning 160
 - connecting 5–7
 - electromagnetic emissions from 153
 - glare on screen 152
 - handling 156
 - headphone jack on 52
 - interference on screen 156
 - placement and position of 5, 152
 - screen damage prevention 156
 - turning on and off 12
 - using monitor with built-in microphone 93
 - using monitor with built-in speakers 44
 - monitor-out slot 127
 - monitor power cord 5–6
 - monitor power cord plug 6
 - monitor power socket 6, 39
 - Monitors & Sound control panel 42–43, 47–48
 - monitor video cable, connecting 7
 - monitor video port 7, 38
 - mouse
 - cleaning 88, 161–162
 - connecting 8–10
 - holding 17
 - locking and unlocking 162–163
 - moving 17–18
 - moving pointer with 17, 18
 - position off 152
 - shortcuts using 35–36
 - spills on 155
 - troubleshooting connections of 88
 - mouse button 17
 - mouse cable 8
 - moving
 - Macintosh Guide window 26, 33
 - mouse 17–18
 - pointer on screen 17, 18
 - windows 20

N

network

- alternative network, connecting to 124
- backing up files on 64
- connecting to 123–126
- Ethernet, connecting to 124, 125–126
- local area network 123
- LocalTalk, connecting to 124, 125
- sharing CD-ROM discs over 74

Network control panel 125, 126

numeric keys 180

O

office arrangement guidelines 151–152

online services, access to 140

on/off switch. *See* standby power button;
Power key

Open/Close button on CD-ROM drive
68, 69, 70

Open command (File menu), shortcut
for 35

opening

- application programs 59, 90
- CD-ROM drive tray 68, 95–96
- computer 129–133, 168–171
- documents, troubleshooting 90, 91, 97
- icons 20
- Macintosh Guide 26
- menus 19
- Photo CD images 72–74

Option key 180, 182

P

PC Exchange control panel 84, 91

PCI card

- installing 134–139
- networks and 124
- purpose of 127

PCI card access cover 39

PCI slot 124, 125, 127, 134

performance problems 100–101

Performa Tutorial program 13, 14, 17–18

peripheral component interconnect.

See PCI

Photo CDs 71, 72–74

file formats for 71

memory used by 74

obtaining 72

opening images on 72–74

recording photographs as 73

resolution of 74

single-session and multisession 73

troubleshooting 99–100

viewing contents of 73

working with 72–74

photographs, putting on Photo CDs 73

PlainTalk Microphone. *See* Apple
PlainTalk Microphone

playing audio CDs 71, 72

plugging in the computer 2–4

pointer

frozen on screen 75, 76–77, 89

placing on insertion point 89

pointing devices, troubleshooting 88. *See*
also mouse

ports

Apple Desktop Bus (ADB) port 8, 9,
38, 39

external modem port 11, 38

handling 155

modem port 38, 39, 124

monitor video port 7, 38

plugging connectors into 155

printer port 38, 39, 124, 125

SCSI port 38, 39

security lock port 39

sound input port 38, 41, 44

sound output port 38, 41, 44

posture, while using equipment 150

power cord 4, 5–6, 154

Power key. *See also* standby power
button

failure of 77–78

location of 12, 38

- purpose of 38, 180
- restarting computer with 22, 77
- turning computer off with 21
- turning computer on with 12, 22
- power-on light 38
- PowerPC microprocessor 65, 92
- power plug 4
- power socket 39
- power supply, safety precautions for 160
- power, warning about 37
- printed circuit boards. *See* expansion cards
- printer drivers 102
- printer port 38, 39, 124, 125
- printer, troubleshooting 81, 101–102
- problems. *See* troubleshooting
- programs. *See* application programs
- protocols for Ethernet networks 126
- Put Away command (File menu) 69, 94

Q

- question mark icon
 - blinking at startup 81, 112, 113
 - as Guide menu indicator 19, 25
- QuickTime extension, using with
 - Photo CDs 71
- Quit command (File menu), what to do
 - when it cannot be chosen 77
- quitting applications
 - shortcut for 183
 - when problems occur 77

R

- RAM (random-access memory).
 - See* memory
- Read Me files in Apple Extras folder 23
- read-only memory (ROM) 67
- rebuilding desktop
 - shortcut for 183
 - troubleshooting and 78–79, 83

- recording
 - photographs as Photo CDs 73
 - sound 44, 45, 48, 93
- reinstalling system software 111–121
- remote control sensor 38
- repairing. *See also* Apple-authorized service provider
 - computer 76–77
 - floppy disks 106–107
 - hard disk 104–107
- repetitive stress injuries (RSIs) 150
- resolution of Photo CDs 74
- Restart command (Special menu) 77
- restarting the computer
 - after Shut Down 22
 - forcing the computer to restart 183
 - problems restarting 78, 90, 96
 - using restart to solve problems 77
- Restore All Software program 118
- Restore System Software program
 - 115–116
- restoring
 - information on hard disk 64
 - system software 115–117
- Return key 180
- ROM (read-only memory) 67

S

- “sad Macintosh” icon 82
- safety precautions 154–160. *See also* health-related information
 - CD-ROM discs 157–159
 - CD-ROM drive 158–159
 - connecting equipment 37
 - electromagnetic emissions 153
 - floppy disks 159
 - general precautions 154
 - grounding plug 4
 - handling computer equipment
 - 155–160
 - power supply 160

- safety precautions (*continued*)
 - preventing voltage overload during
 - lightning storms 12
 - turning computer off before
 - connecting equipment 37
 - when to turn off the computer and pull the plug 154
- saving extensions 78
- screen. *See also* monitor
 - basic elements on 19
 - "burn in," avoiding 156
 - cleaning 153
 - dark 15, 80
 - frozen 75
 - glare and reflection on 152, 153
 - height and distance of 152
 - moving pointer on 17–18
- screen saver programs 156
- scroll arrow on windows 20
- SCSI chain 53–55
 - cables for 54–56
 - connecting devices in 53–56
 - number of devices supported in 53
 - SCSI ID numbers and 53, 54
 - terminators in 55, 56
- SCSI devices
 - connecting 53–56
 - device drivers for 56
 - ID numbers for 53, 54
 - terminators for 55, 56
- SCSI icon 53
- SCSI ID numbers 53, 54
- SCSI peripheral interface cable 54
- SCSI port 38
- SCSI system cable 54
- security lock port 39
- service. *See* Apple-authorized service provider
- setting up
 - adjusting keyboard angle 10
 - connecting external SCSI devices 53–56
 - connecting the modem 10–11
 - connecting a monitor 5–7
 - connecting mouse and keyboard 8–10
 - installing expansion card 127–148
 - plugging in the computer 2–4
 - turning computer on for the first time 12–15
- sharing, CD-ROM disc over network 74
- Sharing Setup control panel, ejecting CD-ROM discs and 69
- Shift key 180
- shortcuts 35–36
 - for Finder tasks 35–36
 - to eject floppy disk 85
 - to force an application program to quit 183
 - to force computer to restart 183
 - to ignore the selected startup device 183
 - to quit an application 77, 179
 - to rebuild the desktop 183
 - to restart when Restart button cannot be chosen 77
 - to start the computer from a CD-ROM disc 183
 - to start the Extensions Manager 183
 - to turn off system extensions 183
- Shortcuts command (Guide menu) 35–36
- Show All command (Application menu) 62
- Show Balloons (Guide menu) 34
- Shut Down command (Special menu) 21, 22
- shutting down the computer 21–22
- SimpleText word processor, opening Photo CD images with 74
- size box on windows 20
- sleep, waking from 21, 80
- slots
 - cache module 127, 166, 174
 - communication slot 124, 125, 127, 141–145
 - DRAM DIMM slots 127, 166, 167, 172, 173
 - monitor-out slot 127

- PCI slot 124, 125, 127, 134
- video-in slot 127
- software. *See* application programs; system software
- sound. *See also* AppleCD Audio Player program; audio CDs
 - adjusting volume of 42–44, 51, 98
 - recording 45, 48, 93
 - 3D Surround Sound technology 43, 52, 92
 - troubleshooting 92–93, 98–99
- sound control panel. *See* Monitors & Sound control panel
- sound input port 38, 41, 44, 46, 47
- sound output port 38, 41, 44
- speaker icon 40
- speakers
 - built-in subwoofer and 40, 42, 43, 44, 49, 51
 - connecting external speakers 49–51
 - connectors for 44
 - troubleshooting 92
 - using monitor with built-in speakers 44
- special characters and symbols 181–182
- special keys 179–183
- Special menu
 - Eject Disk command 69, 94
 - Empty Trash command 20
 - Restart command 77
 - Shut Down command 21
- spills
 - on CD-ROM drive 158
 - on computer equipment 155
 - on keyboard 155, 156
- standby power button. *See also* Power key
 - location of 4, 39
 - purpose of 38
 - turning computer off when Power key and Shut Down fail 22
- starting up. *See also* startup disk; turning computer on
 - from CD-ROM disc 85, 102–103, 183
 - from floppy disk 63, 121
 - from *Macintosh Performa CD: Performa Software* disc 102–103
 - ignoring selected startup device 183
 - question mark icon appears during startup 81, 113
 - troubleshooting 15, 81–82, 103, 113
- startup disk
 - CD-ROM disc as 85, 102–103
 - creating a startup floppy disk 121
 - floppy disk as 63, 121
 - Macintosh Performa CD: Performa Software* disc as 102–103
 - rebuilding desktop of 78–79
 - repairing 104
 - troubleshooting 81–82, 105
- static electricity, avoiding 129, 131, 168, 169
- stereo miniplug 44, 45, 50
- storage devices, replacing 57
- subwoofer balance control 39–42, 44, 51, 92
- support 23, 76–77
- support hotline 23
- switching programs 62
- symbols, typing 181–182
- system error 75, 77, 87
- system extensions
 - incompatibility of 86, 87
 - turning off 183
- System Folder, extra copy warning 60
- system software
 - accidentally deleting 81
 - backup copies of 64
 - cannot be found by Macintosh 81
 - copying files from *Macintosh Performa CD: Performa Software* to your hard disk 120
 - creating a startup floppy disk 121
 - installing 111–121
 - protecting information on a hard disk 121
 - purpose of 111

- system software (*continued*)
 - reinstalling all original software 118–120
 - reinstalling system software 111–117
 - troubleshooting 120
 - using the *Macintosh Performa CD: Performa Software* as a startup disk 113–115
 - when to install or reinstall 111–112
 - when to use the *Macintosh Performa CD: Performa Software* 112

T, U

- Tab key 180
- tape drive, backing up to 64
- TCP/IP protocol 126
- television
 - interference 156
 - watching broadcasts on the computer 60
- terminators in SCSI chain 55
- testing a hard disk 102, 105
- 3D Surround Sound technology
 - troubleshooting 92
 - using 43, 52
- title bar on window 20
- TokenRing network, connecting to 124
- Topics button in *Macintosh Guide* 27–28
- Trash 20, 34
- troubleshooting 75–121. *See also* Apple-
 - authorized service provider;
 - Balloon Help; error message;
 - help, sources of; *Macintosh Guide*
 - accidentally deleting a program 81
 - application programs 60, 86–92, 93
 - audio CDs 98–99
 - bomb icon 75, 77, 87
 - “burn in” on screen 156
 - caret prompt on screen 93
 - CD-ROM discs 96–99, 102–103
 - CD-ROM drive 94–96
 - clock/calendar 80
 - common problems 80–93
 - computer performance decreases 100–101
 - dark screen 15, 80
 - diagnosing problems 76
 - document cannot be opened 90
 - DOS documents 91
 - ejecting floppy disk 85, 159
 - error messages 75, 76–77
 - file cannot be found 91
 - floppy disk 84, 85, 106–107, 159
 - hard disk 104–107, 108–109, 121
 - hard disk icon does not appear on desktop 83
 - headphones 92
 - High Sierra discs 98
 - icons do not appear correctly on screen 83
 - interference on monitor 156
 - ISO 9600 discs 98
 - keyboard 89–90
 - memory 86
 - microphone 93
 - mouse connections 88
 - performance problems 100–101
 - Photo CDs 99–100
 - pointer doesn’t move when you move the mouse 75, 76–77, 89
 - Power key does not turn off computer 77–78
 - printer problems 81, 101–102
 - question mark icon at startup 81, 112, 113
 - quitting application program when problem occurs 77
 - rebuilding desktop 78–79, 83
 - reinstalling system software 111–117
 - repairing damaged disks 104–109
 - restarting the computer 77–78
 - screen is dark 15
 - shutting down the computer 22
 - software problems 86–87

- solving problems 77, 78–79
- sound problems 98–99
- spills 154, 155, 156
- startup problems 15, 81–82, 103, 112
- system error 75, 77, 87
- system software problems 81–89
- turning computer off 22
- turning computer on 15
- typing on the keyboard produces
 - nothing on screen 89
- where to find answers 23
- turning computer off
- troubleshooting 22
 - when Power key fails 22
 - when Shut Down command fails 22
 - with Power key 21
 - with Shut Down command 21, 22
 - with standby power button 22
- turning computer on
 - after shutdown 22
 - for first time 12–15
 - troubleshooting 15
 - with Power key 12, 22
- turning SCSI devices on before the computer 56
- tutorial program 13, 14, 17–18
- TV tuner card 39, 60, 127
- TV, viewing on computer 126
- typing special characters and symbols 181–182
- unlocking mouse 162–163

V

- ventilation 155
- video input card 39, 60, 127, 139
- video-in slot 127
- video screen. *See* screen
- video, viewing on computer 60, 126
- virtual memory 63, 87
- voltage overload, preventing 11
- voltage switch, setting 2, 3
- volume
 - adjusting on computer 42–44, 51
 - troubleshooting 92, 98

W, X, Y, Z

- waking computer from sleep 21, 80
- warranty 76
- windows 20. *See also* Macintosh Guide
 - window
 - bring hidden portions of into view 20
 - bringing to front 20
 - changing shape of 20
 - changing size of 20, 33
 - closing 20, 33
 - hiding and showing on desktop 62
 - moving 20
- work area, arranging 149–153
- wrist problems 149–150
- zoom box on windows 20, 33

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